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Original Articles

NUTRITION AND CONSERVATION

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"Wherein I am but a gatherer and dispenser of other men's stuff."

—*Sir Henry Wotton.*

IN SUBMITTING this essay to the Editor of the AMERICAN JOURNAL OF ORTHODONTICS for publication I have done so because I believe there is a crying need for a deeper understanding by the people of our country of two very important fundamentals of life, namely, nutrition and conservation. It was at the Chicago meeting of the American Association of Orthodontists, where I saw an audience of hundreds of alert people, both men and women, intent upon learning to enhance their services to mankind, that the idea came to me. It seemed to me that professional people who are in constant contact with all types could influence many to think constructively in relation to both nutrition and conservation.

Orthodontists should be among the first to be well informed upon the fundamentals of health and survival. In fact, all professional people interested in the health of man should now, more than ever, become more efficient, not alone in their work but definitely more interested and better informed in subjects that lay the foundation of our existence.

Korea should alert every man and woman to the urgent necessity for clearer thinking in all matters concerning health and survival.

This essay is unlike the usual material accepted for publication in our JOURNAL. There is to be found little of originality except some personal observations in both nutrition and forest conservation. For the most part the material presented is the result of research in the literature on the subject, and it was prepared for a discussion group in Newton Center, Mass., in 1948. The original title "Our Vision of Hope" was used advisedly because of the fact that much pessimism appeared in numerous books and magazine articles in late years. The title as it appears in our JOURNAL is more in keeping with the present purpose, nutrition and conservation.*

Read before "The Neighbor's" Club, Newton Center, Mass., Monday, April 12, 1949.

*At the end of the essay a short list of books is given that may be of interest to those who wish to pursue the subject further.

Some of you probably are familiar with a book published during the war entitled, *Enough and to Spare*, by Prof. Kirtley F. Mather. I remember when sending a copy of this book to my son, who was then medical officer with the Seventh Army, I wrote, "If our political leaders could become familiar with and understand the basic thought contained in this volume and acted upon it wisely and with candor, the world would become a safer and better place for mankind." Since that time many books, magazine articles, and newspaper pieces have been published showing that an awakening in basic thought in relation to man's physical and spiritual survival is taking place. With so many minds at work there, of course, is much disagreement. Some write from well-founded knowledge based upon scientific foundation, others resort to wishful thinking and dramatic statements of pure emotionalism. Some of the titles of these publications may interest you because they indicate the broad scope of contributing areas of knowledge involved. Some doubtless you have read with interest and others possibly with incredulity.

Several of these books will be found to be thoroughly basic in content, while others, although concerning themselves with fundamental ideas, yet tend somewhat toward the dramatic. Here are a few examples: *The Road to Survival*, by William Vogt; *Our Plundered Planet*, by Fairfield Osborn; *To-morrow's Food*, by James Rorty and N. Philip Norman; *Soil and Health*, by Sir Albert Howard; *The Soils That Support Us*, by Charles E. Kellogg; *Natural Principles of Land Use*, by Edward H. Graham; *Hidden Hunger*, by I. G. Macy and H. H. Williams; *Chemistry of Food and Nutrition*, by Henry C. Sherman; *Human Breeding and Survival*, by Guy I. Burch and Elmer Pendell.

The author of the last-named volume is a neo-Malthusian. He is a friend of mine of many years' standing, although I had not seen him for some years when he called upon me in July, 1947, at my country place. As might be expected there was much to talk about because during those intervening years he had developed a hobby into a profession and had become internationally known as a Population Expert. Our conversation during the afternoon proved to be stimulating and thought-provoking. It is upon the thread of that conversation that this present paper hangs. Being a shadow of an unpremeditated talk, it is incomplete and fragmentary in many of its aspects, but in spite of that I hope it may furnish you with a proper foundation for further individual research.

In selecting a subject for this paper I have not been able to escape the thought of man's relationship to the earth, his absolute dependence upon its thin carpet of green, and the dire necessity for his assuming now an attitude of deep and abiding appreciation of this, the earth's life-giving carpet, with all that it means to his physical and spiritual growth, by which I mean his health, his physical and mental well-being, and his attitude toward the Creator.

We are hearing much these days about increasing population everywhere, and we are also hearing much these days about diminishing and infertile soil everywhere. We are told of starvation and human misery everywhere, and we have become fearful lest we see in our time want unrelieved, misery undiminished, disease and death rampant upon the earth. If these, the prophets of doom,

could be considered irresponsible and puerile demagogues, some of us, at least, might not become disturbed; but when grave warnings come from the minds of highly educated and ethical scientists of our day, only the few and not the multitude become aroused. It is obvious, then, that, unless the great masses of population upon the earth are educated to the point of understanding and dynamic action, there is grave danger that there may descend upon us disasters of unimagined gravity, for upon exhausted soil anarchy thrives. Hungry people will not endure reason, they spurn justice, and they will not heed any cry for mercy.

It is because of these fears that are now agitating the minds of men of vision and responsibility that I bring before you some of the basic reasons for this tragic situation. Only those who have unbounded faith in human acccomplishment are the ones who are able to adopt an optimistic view of the future. But there are those of lesser faith and of equal scientific achievement and earnestness of purpose whose fears will not be stilled. That the earth can be made richer and yield more abundant health and greater accomplishment is, I believe, the attitude that should be assumed by all right thinking persons, but with this assumption there should go a mighty and determined effort to save this earth from threatened destruction, for the threat to its survival was never greater than it is at present. The necessity for a widespread community of basic understanding and effort is a difficult achievement, and its most unfortunate feature is that it cannot be accomplished quickly. Complacency now is not a virtue for it fosters decay, and decay from within is all too obvious in the complete lack of any faith, any philosophy, or any convictions on the part of vast numbers of people all over the world.

Our present fervent prayer should be that there yet may be time for the deliberate and considered action that is so vital in this present crisis. People of different languages all over the world are praying: "Give us this day our daily bread," but apathy through malnutrition is pregnant with frustrations.

Now with these ideas in mind let us turn our attention to an attempted better understanding of the earth's green carpet, and inquire into its nature and its complexity and come to a realization of its need and special understanding and scientific care. At first we can think of the green surface as a vast chemical and physical laboratory, a region of immense microbial activity. There are found bacteria, fungi, protozoa, and other forms of plant and animal life in its composition. All of these elements have their special work to do. The microorganisms decompose plant residues, thus manufacturing humus, while others enrich the soil by extracting nitrogen from the air. Others parasitize the roots of plants, of which there are innumerable kinds. The struggle for existence goes on continuously, some of these organisms being mutually beneficial, while others are antagonistic.

As the soil chemist visualizes it, he sees it in terms of a living vital entity upon which the life and health of all living things depend. This is the kind of soil our ancestors found when they settled in America and upon which much of their health and vigor depended. Now it can be readily understood that the soil

together with the climate are the fundamental factors in the nation's agriculture, because they determine the amount and quality of food that can be produced. Considered in any way we wish to look at it, this vital soil seems to be man's most valuable single asset, but, unfortunately, for too many years its vital significance has been misunderstood. In this country from early colonial days to the present time it has been lavishly squandered, and man has been unmindful of the fact that this green carpet is neither unlimited nor inexhaustible.

Through ignorance and greed the land has been abused, until now we are forced to begin a re-education of ourselves to the end that we are compelled to think of conservation as of primary importance, and learn to treat the soil intelligently and scientifically. Few indeed realize that the formation of fertile soils is a long, long process. The weathering of many kinds of rocks, the effects of numerous varieties of plant growth, and the activities of myriads upon myriads of microorganisms have extended over centuries of time to furnish us with this marvelous gift of life. Is it not then a vision of hope when we can say that realism and fundamental understanding are beginning now to take the place of false optimism of those who first assaulted the soil in ignorance of its true value, and who had the destructive notion that the land of our country was unlimited in quantity and eternally rich in quality? In the early years the land was plentiful and was exploited without thought or fear regarding the national safety; but that lush period has long since passed. The men who rushed the land, the forests, and the plains, and developed for themselves vast riches did, as a matter of fact, much for the early and proudly remembered development of our country. But unfortunately for us at this age and for those who come after us, these first men in their breath-taking speed failed to take the long view which we of this generation are being forced now to take in order to secure our future existence.

Anyone who has traveled across the broad expanse of our own fair country and regards it as his own, his native land, must be conscious of a sense of despair at what confronts the eye—streams polluted with industrial waste and sewage, once rich farm lands cut by eroding gullies, weedy ranges, unkempt wood lots, burned-over forest lands—a picture we do not like to remember or talk about. In the bounteous past our forebears perhaps could afford to ignore these things, but on account of their rapid increase we cannot do so. We need to develop a kinship with the land, a way of knowing it and caring for it, and gathering its harvest with appreciative and gentle hands. For without thoughtful use and management the nation cannot endure.

At this moment my mind goes back to that day in July in 1947 when my neo-Malthusian friend came to call. During our conversation my mind was often diverted by sounds that reached my ears from the near-by hills. They were ominous sounds, the sounds of destruction. For round about me on the north, south, east, and west men had been busy destroying acre upon acre of forest growth. Havoc in the country is far more extensive than is generally realized. We of the East Coast remember the hurricane of 1938. Those of us who were severely affected recall the magnitude of that disaster. We had to

accept it because we were powerless to prevent it; but when we are told of the wholesale destruction all over the land proceeding at an increasing tempo, not for the short duration of a few hours, but continuous, hour by hour, day by day, on into the months and years in direct violation of any concepts of conservation, with no thought of the generations yet unborn, we are appalled.

There are perfectly sound and safe methods, with which all foresters are familiar. They are methods that are being taught and practiced, unfortunately, in limited areas only. These practices have the effect of perpetuating forest growth, not destroying it, conserving the forest floor and enriching the country in countless ways, but blind greed must have its way even should the forest reservoir be entirely destroyed. For two years now I have heard the bite of the woodsman's axe and the fall of the forest's trees. I have seen thousands of truckloads of lumber carrying millions of board feet of immature growth to the yards, the product of trees sacrificed long before maturity. A year later I visited the area where the woodsmen had held high carnival of destruction. Up hill and down dale I tramped over a strangely unfamiliar territory, one which formerly possessed all the woodland charm, all the essentials of perpetuity, now a dreary waste, despoiled of all its esthetic value, deprived of any possibility of again contributing fully to man's security. Greed has no lateral vision. Oblivious to external reality, it is improvident. Hastily constructed roads everywhere were in evidence.

Today the woodsman makes full use of the bulldozer tractor, and in no time at all he constructs his roads to any given point. To my amazement and consternation I saw the topsoil stripped from the steep slopes, exposing them to the erosional forces of ice, snow, and rain. Thus we can learn from this comparatively small area that erosion comes about through the exposure of the land by thoughtless use, through greed by overuse, by the careless removal of its vital protective cover of grassland and forest, thereby destroying the water supply that is so vital in the development and growth of protective vegetation. Any careless measures taken by men that expose the topsoil so that it yields to heavy rain on the one hand, and drying sun and devastating winds on the other, inevitably impoverish the nation.

The observant person, travel where he may, cannot escape noticing numerous areas where deep gullies due to erosion, growing deeper and wider year by year, give testimony to this costly type of sabotage. In spite of the fact that during the past few decades these unwelcome facts have been brought to our notice time and time again, still there remains many who are not even slightly aroused. There are other types of erosion that are perhaps as fully disastrous to our economy. Dust storms continue to occur, rivers run torpid and heavy with eroded material, forests continue to burn and be destroyed by men who mistake freedom for license to create havoc on the earth. And yet the masses, including even those among our most intelligent citizens, are little concerned. We still permit plundering and waste to continue over widespread areas of the country. Even while this erosional waste is progressing, not only are men content to see the vital green surface degenerate, but by improper methods of land culture the very life of the soil itself is being depleted, so that many acres cannot now yield

enough of the elements upon which life and health depend—the life and health of domestic animals as well as of man himself.

It seems to me that it needs but little research, but little careful observation and little reflection upon the fundamental laws of nature to understand what is in reality basic in our escape from perpetuating the conditions that now lay at the root of so much of our national ill health. While the natural universe functions perfectly, human failures and futilities make a record of persistent stupidity. Endowed with free will man refuses to conform to natural dictation. Food values are continuously being destroyed by refined methods of processing, and the people are propagandized steadily to make further and further use of food possessing little or no nutritional value. Thus by disobeying the laws of nature man is buffeted about without realizing that his punishment is inevitably the result of his disobedience. We have failed to evaluate properly our relationship with the earth, or to realize that we maltreat ourselves when we fail to acknowledge the natural laws in respect to culture and the treatment of its products.

After reviewing the wasted resources of the world through erosion, careless use, fire, flood, and wind, the question naturally arises: "Have we left for our use sufficient soil resources to meet the food requirements of the earth which are ever increasing, not alone because of the fast mounting population, but also because of the added requirements of fertility demanded by recent discoveries in the science of nutrition?" It is no longer enough to fill the stomachs of the starving (and indeed that is far beyond our ability today). Qualitative considerations must also be fully met to free the world of the many deficiency diseases and subclinical ailments that render millions of people so much less efficient than is their hereditary right. Now the answer to this question is not alone a challenge to the scientific men of the soil, but is a challenge to mankind, to every single individual on the earth—indeed, it includes the whole field of human relationship.

Our men of science may make vital discoveries that point the way, but they cannot force concerted action by the masses. The fullest measures of achievement can be attained only through education and economic action by the great majority of all the people. And here we are confronted by that disturbing word "if," the word that begins many a sentence of despair: if they will take heed; if they will only understand; if they will toil on the land; if they will know the soil and attend it with respect in a determination to give battle to the forces of destruction and save the soil, itself, from hunger; if they are willing to expend one-half the money and energy that was wasted in the world's last two great wars, then and only then shall our vision of hope be extended to a reality of accomplishment.

The safeguards to man's survival upon the earth are down. They must not only be repaired, but we must also augment them by restoring our wasted lands to a permanent fertility. Agronomists tell us that millions upon millions of earth's fertile acres are now permanently destroyed beyond any hope of rehabilitation, and that our present land potentials are now insufficient to meet the demands of the ever-increasing population. More than half the world's

people do not get enough to eat. When a man's stomach is never filled and a mother sees her children go hungry, the most inspiring promise is the promise of food. Deny it to them, for whatever reason, and their finer human qualities depart and the savage hungry beast becomes supreme until exhaustion and death.

Mankind has one thing in common, namely, an interest in food, albeit for the great majority that interest is primarily in the appeasement of hunger or the stimulation of his taste buds. For most, the consideration of basic quality of food is not paramount and receives little or no serious thought. They take what is offered with little regard for its nutritional value. Thus many, living in a land of plenty, are abundantly fed but poorly nourished. Individuals nourished largely on potatoes and milk possess a far better physique, and have far superior vitality than those who breakfast upon coffee and devitalized white bread. It is true they both derive energy from this diet. The former absorbs many life-saving elements while the latter absorbs almost nothing of vitalizing food.

Early one morning I happened to find myself in the North Station in Boston with time to observe the streams of humanity passing through. I was soon aware that many had left home evidently without having had breakfast because they were crowding the restaurants and food counters everywhere. My observations showed me the astounding faults in the eating habits of this great throng of clerks, businessmen, and workers of varying sorts. And this I remembered is taking place everywhere throughout the country.

While we moderns are wont to boast about our many accomplishments, it is sometimes found that in our enthusiasm and pride we have often overlooked what is still going on in this world in the physical sense, at least, among people whom we so often regard as our inferiors. In the attainment of physical perfection there are races of men that are, nevertheless, worthy of our study and attention. During the close of the last century and the beginning of our present one, there was sent to India by the British government a scientist by the name of Robert McCarrison. His mission was to investigate the food habits of the Indian peoples. As might be supposed, his investigation into the food habits and the health of the people of India presented a story of discouragement and frustration.

Everywhere in his travels he came upon disease, starvation, and death, until at last he found a small tribe of people who appeared surprisingly healthy. He was directed to this spot just a few hundred miles northeast of the vale of Kashmir at the foot of the Himalaya mountains by reports that had come to him about this small but wonderful race of people. Every report he received pictured them as most extraordinary, and when he finally arrived in this small area he found a race of fair-skinned people with deep-chested, narrow-hipped bodies like the people of ancient Greece. They were called Hunza, and he found they had much to recommend them. As farmers they were industrious and skillful, although primitive in their methods of agriculture. As mountaineers and porters they frequently served the British mountain expeditions, and their performances were found to be phenomenal. They thought nothing of walking sixty miles to do their trading and immediately start back again heavily laden. Their youths

were hardy enough to dive through holes in the icy river and swim under water for distances that would do credit to a seal, and their brains very well matched their physique. As tillers of the soil they were in a class by themselves. They had carpenters, masons, gunsmiths, and iron workers. Their engineers built good roads, rope bridges, and irrigation canals.

The more Dr. McCarrison observed these unusual people the more determined he became to reach an understanding of whatever was basic in the development of people who were so far superior to the tribes that surrounded them. It could not be the climate, he thought, because their climate was identical with that of their neighbors who were weak physically, and suffered greatly from the inroads of various diseases. Nor could it be their methods of sanitation, because in this respect the Hunza were apparently no more careful than their neighbors. Finally, McCarrison came to the conclusion that it must be due to their superior diet. He reached this decision without the benefit of nutritional science which at that time was only in its infancy. But he made a number of empirical observations, all of which seemed to point in the same direction. One of his first observations was that these people never suffered from dyspepsia of any kind nor from gastric or duodenal ulcer, appendicitis, colitis, or cancer. In fact, the only attention these people ever gave their stomachs was when they were hungry. McCarrison also discovered that even if their remarkable health depended upon their diet it was not because of its great variety; for their daily fare they had only grains such as wheat, barley, and maize. They had some vegetables and fruits, apricots being the most abundant. They had a certain amount of milk and butter provided by the goats that browsed the scant pastures on their steep and restricted domain. Only occasionally he found did they eat meat; and on these meager rations the Hunza lived long and happily.

McCarrison returned to England without having finally discovered the real secret of these people. He made some report regarding them, and then in the year 1922 he returned to India, this time equipped to make scientific experiments which subsequently brought him world-wide fame among nutritionists. His idea was brilliant and simple. What he did was to feed some rats on a diet based on that of the Hunza, and other rats upon a diet like that of the undersized, disease-ridden neighboring tribes. The Hunza rats were given a diet of whole wheat bread smeared with fresh butter, sprouted legumes, fresh raw carrots, fresh raw cabbage, whole milk, a small ration of meat with bones once a week, and a generous supply of water. On this diet the rats grew rapidly, were never sick, mated and had healthy offspring.

But it was quite different with some of the other rats which became subjects of many of McCarrison's experiments. They were fed diets similar to the diet of the poorer class people who lived around the borders of the Hunza territory. Their diet consisted of polished rice, tapioca, pulse, vegetables, condiments, and a little milk. The results were amazing. These rats soon acquired almost every disease listed in the medical books, including pneumonia, sinusitis, enlarged glands, goiter, polyneuritis, and heart diseases of various kinds.

What this pioneer's work clearly pointed to was that there was something wrong, not merely with the food of these poorer tribes in India and the poorer

classes in Britain, but also with the ill-advised use of processes in fields and food factories that brought about the production, distribution, and consumption of a variety of inadequate, health-destroying foods. Also that in contrast there must be something profoundly right about the Hunza's way of life—and there was. For centuries these people have practiced a particularly sound and balanced agriculture. Their terraced fields are similar to the pre-Incas, people of the Andes. The soil of these "staircase" fields is irrigated and renewed by the silt-bearing water brought down by aqueducts from the glaciers of the surrounding mountains, which year after year go on grinding mineral supplements for the Hunza farmers. Their methods, prescribed by rigid tradition, required the meticulous return to the soil of all human, animal, and vegetable refuse. The product of these methods is a permanent agriculture, a fertile soil requiring no artificial fertilizers. Moreover, the Hunza crops are relatively immune to the plant animal parasites and diseases with which the occidental farmer must fight an unceasing battle.

There, in the shadow of the Himalayas, these primitive tribesmen have for centuries preserved the delicate balance of soil and plant and animal life around which the cycle of health revolves.

At this point, I should like to discuss the problem of nutrition and morale, or perhaps better, nutrition and the human spirit; but to put it briefly, the circumstances of our time seem to leave their indelible impression upon the spirit of the age. I have seen so many men and women who seem to have lost their self-reliant spirit, their spirit of integrity, exhibiting a lowered morale which seems more akin to the spirit one would find among the malnourished, in contrast to that of the buoyant, self-reliant, and virile manhood and womanhood found among the well-nourished and virile people such as the Hunzas of India.

Among the Hunzas there is no evidence of hidden hunger. Hidden hunger may be thought of as a physiologic need and as such always seeks satisfaction, but being hidden and unrecognized the organism reacts ofttimes blindly and unfavorably; for example, the well nourished seldom are addicted to the use of narcotics. The dipsomaniac is always desperately malnourished even though sometimes he may appear well fed. The difference is great and fundamental. Our devotion to the idea of restitution for our own mistakes and those of the generations gone before is to be undertaken in humility and sincerity. A new concept of individual responsibility is the hope of the few who sense the threatening shape of the future physical and spiritual existence of mankind. Our physical and spiritual beings are so entwined that neither can reach its highest pinnacle of attainment in the absence of the other. In the absence of buoyant health man's spiritual life ofttimes cannot be sustained in its devotion to trust because starvation and disease rob the spirit of the hope and faith that alone underlie its growth. I think of the human spirit as that measureless element in man's nature that influences and directs his reactions in response to the complexities of his environment, or perhaps more simply, the wellspring of his personality.

The spirit of the age is frightening in many of its aspects, and sometimes, as I watch our own nation speeding, with evident disregard of the future, down

the road that leads only to destruction, I seem to be contemplating the possibility of the greatest tragedy in the history of mankind, the ever-increasing number of people on the earth, the malnourished children of poorly nourished parents, with minds that often cannot cope with the realities of life, growing to manhood and womanhood still in the adolescent groove, their spirit of self-reliant thinking undeveloped, thus allowing them to become victims of propaganda from political nonsense to medical and nutritional quackery and worse. Hence the inexorable pressure of the world's increasing qualitatively inferior population intensifies every economic and moral problem of our time.

When the thoughtful person realizes that in the past three centuries the population of the world has increased fivefold from four hundred million in 1630 to over two billion, two hundred million today, and the possibility of four billion in another seventy years, and when he realizes the miseries of the world at this moment and contemplates their inevitable increase, he rightly wishes to have all mankind well fed, well housed, and well clothed. But when he tries to achieve this he is brought face to face with impossible situations. In his efforts to alleviate the situation through confiscatory taxation he finds to his dismay that national economy breaks down; and where skill, energy, and thrift are not rewarded, and laziness and incompetence are not penalized, too many are not enthusiastic about work.

Now we cannot hope to revive in the minds of men and women a proper concept of individual responsibility as long as weak and malnourished people are propagandized in so many directions that they virtually are led from one blunder to another in the conduct of their daily lives. The virility of the self-reliant spirit, the virility of the thinking mind must in some way be restored to the masses of the people, because democracy is only possible among people who have cultivated the ability to think, and thinking, as we all know, is rarely a heaven-born thing, but must be industriously cultivated from early youth through the entire life span.

As I already have intimated, man's worst enemy is man himself, in his nature, in his habits, in his beliefs, and in his manner of living; and because of his obstinacy he may refuse to abandon many of his food habits, and even turn away from those that science has proved to be essential for his optimum health. But if we can change by education, or otherwise, eating habits according to the dictates of science, much may be gained in the fight for abundant health, especially with the younger generation. Achievements in nutrition have been most gratifying in recent years, and their influence upon the health of a few fortunate people has been shown to be real and far-reaching. Is not this a vision of hope? Especially when we realize the shock to the country when we learned that two-thirds of the people of the United States were not eating the food that scientific investigation had shown is needed for buoyant health and for nutritional and mental stability. Happily there is a growing interest in food, its significance in health, its significance in efficiency, reproduction, and a vigorous longevity.

"The science of nutrition is asking questions of nature. Her answers are making more intelligible this world in which we live. The new science of nu-

trition is one which increases our insight into the processes of life and the structure of material that we use as food. . . . It has within it the spirit of wonder and the spirit of service. Its service is to the health and efficiency upon which depend length of life and opportunity for achievement in reaching the highest estate for mankind. The newer science of nutrition is making it clear what foods are most nutritious in energizing the human organism so that it may attain its highest values, thus offering protection against many diseases to which the human race has long been subject. Nutritional science also includes the study of the soil from which life has its being, seeking to render the soil capable of supplying all the vital nutritional elements that optimal nutrition demands. And, too, the benefits which we may clearly and confidently anticipate are to be much more than biologic. These benefits relate not only to the health but through health to a social evolution and to ever higher levels of intellectual and spiritual achievement. This is indeed a vision of hope wherein we may glimpse the magnificent spectacle of human health and happiness.

It is evident that population control is more in the hands of God than in the ability of man to control. There are not only many beliefs that foster undue and unwanted increase in population, but there is also still remaining the instinct to procreation among the masses of people everywhere, people who are ignorant of the possibility of the attainment of a world more virile and freer from disease. This condition for the present we have to accept, and realize that our greatest hope lies in the direction of agricultural and nutritional wisdom, in the preservation of the soils of the earth to the end that they may supply an abundance of all the elements of nutritional value that will create in mankind that virility of body, mind, and spirit that can and should result in an ever-exhilarated evolution toward the goal, the attainment of which is the right of mankind as a reward for his understanding, love, and appreciation of the living earth. Is it not time to recognize that there can be no political stability if the basic sustenance needs of a people are not satisfied? These essential needs cannot be available if the productive land base is inadequate. The mental tenacity of people is weakened if there is not sufficient fertility to give them reasonable security, mental as well as physical. As someone has said, when pressed by hardship their purpose will waver as a reed in the wind.

The task confronting all mankind is one of incomprehensible difficulty. As I have already intimated, to some it is impossible of accomplishment, but to others it offers a challenge. To those who accept the challenge it is clearly before their vision that universal conservation is the first and most important step on the road to stability: the redemption of lost fertility where it is possible, the reforestation of all devastated lands, the intensive study of land use. The principles involved in this understanding must be known to all men. If it is true, as we have always supposed, that the progress of mankind depends upon the product of its greatest minds, together with the diffusion and direction of that knowledge, then it is to the new science of nutrition and soil culture that we must look for our physical regeneration, and to a renewed understanding of the essence of moral and spiritual growth, because these are the rock-bottom foundation stones of any civilized society that is destined to survive.

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60 CHARLESGATE WEST.

INVESTIGATION OF NEUROPATHOLOGIC MANIFESTATIONS OF ORAL TISSUES. III. A FURTHER STUDY IN THE MECHANISMS OF CAUSE AND ACTION WHICH INTERRELATE PSYCHOGENETIC AND OTHER TRANSFORMATION CHANGES

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CLASSIFIED oral pathology, as exhibited in periodontic disturbances, dental caries, tooth pulp abnormalities, oral infections, and other dental maladies, has existed in varying degrees since the beginnings of human history. The records go back more than four thousand years. In all this time, in spite of earnest research, very little progress has been made, apparently, toward a probable answer to what is the fundamental cause of dental disease. All the compiled information of today shows that patterns of pathology in oral tissues have changed only slightly in appearance and degree from the comparable patterns in mummy skulls of predynastic Egypt. Owing to modern research, more teeth are saved today by mechanical means than heretofore, but only after bacterial attack or autolysis has become clinically established. Up to now, for him who graphs the progress of cases of apparent predisposition to tissue breakdown, the curve is not perceptibly influenced by attempted preventive measures. Perhaps this is so for the reason that we do not understand the nature of biologic implications which excite cellular tissue change, nor the involved processes of defensive mechanisms establishing themselves in tissue reactions during an attempt to maintain a metabolic balance. Records of our four years of research at Napa State Hospital, a neuropsychiatric institution, show that of fifteen hundred patients examined and worked with, less than 10 per cent were entirely free of periodontic disorders, such as alveolar resorption in varying degrees, gingival hypertrophy or atrophy, bleeding, Vincent's infection, gingival fibrosed areas or fibrotic gingival nodules, and alveolar and palatal exostosis. Sound unfilled teeth were found in only 2 per cent of the cases examined. Fifty per cent of all cases routinely x-rayed showed evidence of pulp nodular formations, many of them in perfectly good teeth not filled or decayed. Some 10 per cent illustrated various forms of tooth impaction and other dental abnormalities. Among more than five hundred patients of a dental practice, the ratios were about the same as mentioned. In short, this survey seems to show that patients, whether institutionalized or not, are subject to dental maladies in nearly the same proportion. This probably means that among both hospitalized patients and those not hospitalized, most retrogressive processes had their starting points early in life.

Studying a comparable number of histologic stained sections that show progressive pathologic manifestations both in gingival and in pulp structures,

we are led to conclude that structural changes in cytologic elements and in the interstitial connective tissue framework do not momentarily occur, but, rather, that development to a degree at which symptoms finally become manifest requires considerable time. It may take many years for structural cells to change in character, with no outward evidence of what is going on; yet the unseen alterations may have become sufficient to produce an aggregate of clinical symptomatic syndromes pointing to dysfunction. We also find, in comparing younger and older tooth pulps, that the start toward dental pathology occurs early, even before the teens are over. From the ending of the teens and for several years after and toward 30, an acceleration of tissue retrogression appears to occur among those afflicted. From 30 till the end of life, the symptoms of dental pathology, especially periodontic, become more openly manifest. Finally, extraction affords the only relief.

Considering that bacteria are likely causes of dental disease, we are of the opinion that they are primarily opportunists and attack and thrive only when the media and environment are favorable. Examination of oral flora shows that many pathogenic organisms are present at all human ages, even in healthy mouths. This, no new finding, supports the supposition that bacteria are not a primary cause of certain tissue changes but are rather sequential to them. Cases have been cited of teeth fractured by some force or other so as to expose the dentine surfaces to conditions apparently ideal for bacterial attack; yet these vulnerable surfaces have stayed immune for many years. Our research is grounded on the possibility that emotional upsets are the primary cause of a greater share of dental disease. It is of record that during cycles of anger and fear the internal secreting glands are stimulated to powerful action, hormones may be liberated to accentuate motor and sensory activity, and vaso changes occur to support adjustment of tissues to a newly developed condition of defense against change. Certain tissues may be drained of blood as the result of emotional play upon the central nervous system, and certain secretory glands may pour out waste metabolite products during emotional cycles.

While these are examples of comparatively brief general glandular reactions to shock, anger, fear, and sorrow, we also observe long-term emotional processes due to mere tension, for example, or to worry, anxiety, apprehension, or insecurity, or to a feeling of inadequacy—processes or phenomena occupying cycles of months or even of years. It is to such a group of syndromes that we attach significance as establishing irreversible injurious changes.

It is not our intention to enter into the psychopathologic aspects of emotion except as the subject applies broadly; we shall, however, seek to bring to attention a few striking examples of somatic changes observed in studying the effects of emotion and correlated changes of long standing. To reduce conspicuous characteristics of emotional effects to the simplest terms of form and action, we shall segregate certain pronounced symptoms for the purposes of this study. It seems possible to compare usefully the physiologic somatic reactions to emotion with the pharmacologic effects of drugs. Also we may note a parallel end result on comparing autolytic cell destruction with the toxicologic effects of drugs.

Upon this hypothesis, we observe that a cell may be stimulated or depressed in its action by chemical substances; but we also find that cells will respond similarly to central nervous system responses; for example, tears may come in the presence of an onion, and sorrow may have a like effect.

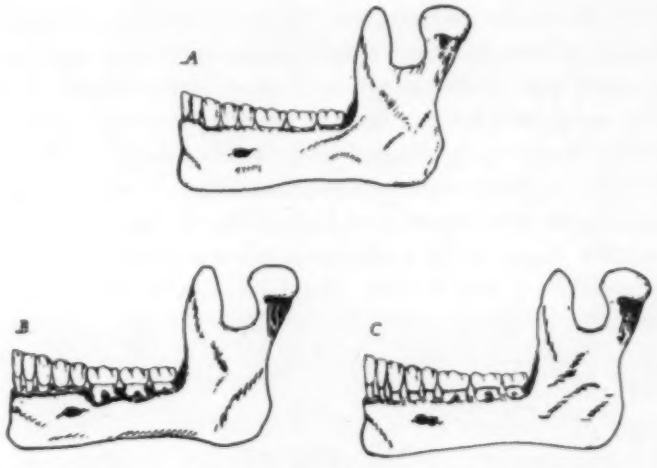

Fig. 1.—Two different processes of alveolar resorption as compared with the normal. *A* represents the normal alveolar relation to the teeth; *B*, uneven resorption; *C*, even resorption.

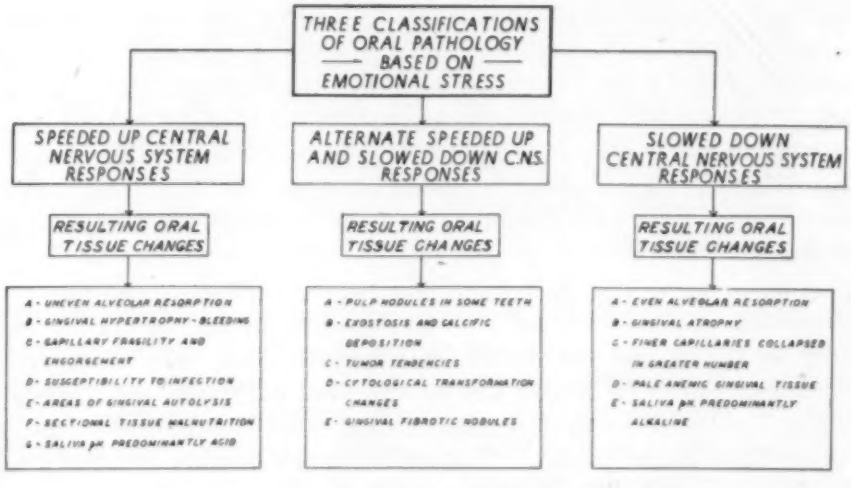
THREE CLASSIFICATIONS OF ORAL PATHOLOGY — BASED ON — EMOTIONAL STRESS
SPEEDED UP CENTRAL NERVOUS SYSTEM RESPONSES
ALTERNATE SPEEDED UP AND SLOWED DOWN C.N.S. RESPONSES
SLOWED DOWN CENTRAL NERVOUS SYSTEM RESPONSES
RESULTING ORAL TISSUE CHANGES
RESULTING ORAL TISSUE CHANGES
RESULTING ORAL TISSUE CHANGES
A - UNEVEN ALVEOLAR RESORPTION
B - GINGIVAL HYPERTROPHY - BLEEDING
C - CAPILLARY FRAGILITY AND ENGORGEMENT
D - SUSCEPTIBILITY TO INFECTION
E - AREAS OF GINGIVAL AUTOLYSIS
F - SECTIONAL TISSUE MALNUTRITION
G - SALIVA ph. PREDOMINANTLY ACID
A - PULP NODULES IN SOME TEETH
B - EXOSTOSIS AND CALCIFIC DEPOSITION
C - TUMOR TENDENCIES
D - CYTOLOGICAL TRANSFORMATION CHANGES
E - GINGIVAL FIBROTIC NODULES
A - EVEN ALVEOLAR RESORPTION
B - GINGIVAL ATROPHY
C - FINER CAPILLARIES COLLAPSED IN GREATER NUMBER
D - PALE ANEMIC GINGIVAL TISSUE
E - SALIVA ph. PREDOMINANTLY ALKALINE

Fig. 2.—Three classifications of oral tissues.

Our patients, then, we have let fall into three primary groupings according to the more specific effects of emotion produced within the mechanisms of the central nervous system. That is, we observe the type of patient who is "speeded up" in his motor and sensory responses, above normal; the type "slowed down"; the type that "alternates" in cyclic phases between being speeded up and being slowed down. It is easy to recall patients who are habitually hyperactive, ever on the go, always in a flurry. They seem nervous, fail to rest well, are always substituting one emotional problem for another, with no satisfaction. They

burn up energy without profit. Conversely there are, in varying proportions, the overformal and slow of judgment and action, rather fearful of decision, given to complaining, probably unfitted to enjoying the usual pleasures of life. Also we know those unpredictables who are up in the clouds one moment, down in the dumps the next.

Thus we have characterized and exemplified the three comprehensive types. In the compiling of studies of many hundred patients who have been notable for their emotional reactions within the meanings of these simple standards, certain intrinsic somatic symptoms form a basis for each category. Figs. 1 and 2 illustrate a compilation of the usual diagnostic and prognostic patterns characteristic of each classification. They seem self-explanatory as representing the somatic macroscopic disclosures relating to oral pathology; we shall, though, endeavor to discuss some of the more salient features of oral tissue pathology, from an etiologic and histogenetic standpoint, based on microscopic evidence.

Fig. 3 illustrates as simply as possible the fact that except for enamel and nerve tissue all dental structures built of basic connective tissue elements, such as dentine, cementum, and supporting alveolus, blood corpuscles and capillary endothelium, and specialized stroma cells of pulp and gingival tissues, are derived from the middle layer of the three primary germ layers, i.e., the mesoderm. From both a developmental and a pathologic point of view, understanding the origin and the noteworthy inherent properties of the important characteristics of the mesenchyme seems to us a fundamental biologic necessity if we are to compare adequately the normal development of tissue with the abnormal; also, especially, if we are to be informed so that we may associate and correlate the effects of emotion with the fundamental biologic causes of continued success or failure of the dental tissues. Of course, while we speak of dental structures we must not lose sight of the fact that all structures of connective tissue origin are susceptible to being affected by emotional forces and in fact in varying degrees are affected, as is well known to students of arteriosclerosis, herpes, and stomach ulcers.

Again referring to Fig. 3, we note that the mesenchyme gives rise to "fixed undifferentiated mesenchyme cells." These cells, appearing to be endowed with potencies far beyond the stretch of imagination, are capable of "transformation changes" so as to become almost any kind of connective tissue element according to need and demand, during normal processes of growth and of the defensive mechanisms of repair. The term "tranformation changes" perhaps introduces a new trend of thought not clearly understood. We may clarify by pointing to some of the potentialities of these cells. For example, during the normal development of the embryo the mesenchyme can become any of the previously mentioned connective tissue elements, that is, dentine, pulp, cementum, blood, and endothelium. Also it is observed that from birth till death some of the fixed undifferentiated mesenchyme cells remain among connective tissues throughout the body, and upon occasion will, if circumstances are favorable, become active and contribute to basic structural replacement changes. On the other hand, we observe that specialized cells derived from the mesenchyme, such as endothelium, fibroblasts, and mast cells, will also change in character

and function to become transformed cells of a defensive repair mechanism of one kind or another, depending upon a tissue's need. A good example is found in the infiltration of fibrous tissue in the coats of arteries or in glandular reticula.

In the dental sense we note the development of chondromal masses within the tooth pulps of teeth, not to be acted upon by bacteria or their products. We also find that the reticulum of the gingiva is subject at times, e.g., under certain forms of cyclic emotional disturbances as shown in Fig. 2, to fibrous infiltration which in some instances may be nodular, in others in the form of long thickened ridges lying on a parallel plane in conformation with the gingival contours. By defensive and repair mechanisms, we do not necessarily mean defense or repair in behalf of normal function; rather, the reference is made on the part of defense against destruction, the process as a whole resulting usually in permanent but variable impairment of function. Or it may be said that as

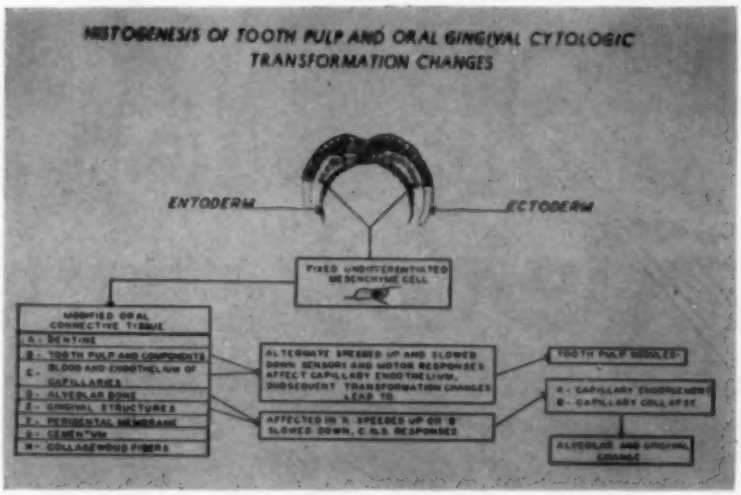

Fig. 3.—Histogenesis of tooth pulp and oral gingival cytologic transformation changes.

fibrosis becomes established in tissues, function is subsequently interfered with and the tissues affected do not return to normal. The resulting pathology is irreversible in direct proportion to the deviation of the changed cell from its original in respect of character, function, and specialization. Though the primary cause seems apparent, further research is required to place in orderly sequence the various cell changes which favor transformation; however, some known factors already form a working basis for continued investigation. First of all, it has been established that emotion has an effect upon the capillaries through direct action, that is, of the sympathetic nervous system upon vaso centers, causing capillary volumetric changes.

It has further been established that capillaries may contract or expand as the result of the formation of local metabolite substances metabolized in interstitial adjacent tissues that are innervated by neuro routes other than those acting directly upon the capillary endothelium. Such reactions occur also through the sympathetic nervous system. Then there are hormone substances,

such as the active principle of the suprarenal gland, which act upon the endothelial walls of the capillaries directly. Such are the "H-substances" that result in part from the antidromic impulses, or from metabolites, owing to normal cell destruction and replacement of cells of like kind during normal metabolism; also from cell injuries, such, for instance, as are due to mechanical forces.

It seems logical to us that localized tissue nutritional imbalance may be brought about by capillary fragility and volumetric changes when long spans of different forms of emotion influence the vaso centers, causing continued and exaggerated constriction or relaxation within the capillary endothelium. In support of some of the contentions, we introduce Figs. 4 and 5 to show microscopic studies of dental pulp and gingival tissues. Each plate illustrates a comparative normal tissue section on the right, and on the left, an abnormal section. Since bacterial action cannot be traced as a primary cause of changes seen within the pathologic sections of either plate, other causes or excitants should be considered, such as food intake, genetic influences, general health, and psychodynamic forces. Reviewing the case histories of the four contributors to the tissue sections composing the plates, we observed that for each patient the dietary values were well over three thousand calories, each consuming proteins, carbohydrates, salts, fats, and metal salts in normal proportions. The two abnormal cases have been taking vitamin fractions for over a year. Dental complaints and clinical symptoms in the abnormal cases had existed over a ten-year period. The two who contributed the normal sections as seen at the right of Figs. 4 and 5 were patients of an office practice.

Of the two patients who contributed sections of pathology, one was an office patient, the other a patient at the Napa State Hospital. The two normal sections were obtained from female patients who exhibited emotional habits within normal bounds, essentially, and were selected for such reasons. The pulp section was taken from an impacted third molar; the gum section, from a position adjacent to an upper lateral incisor a few millimeters above the gingival crest, was removed at the time an adjoining central incisor was extracted because of a periapical abscess. The pathologic pulp section was obtained from an epileptic male patient who had been at the Napa State Hospital for some years. His frequent attacks and manic depressive symptoms of a mixed type had necessitated his confinement. All his teeth were removed because of continued complaints of pain, such as finally became intolerable. This patient, having come to be about the hospital grounds, was occupied during his better times at the tailor shop, where he was alternately elated by his work and depressed by what he called his lack of mental progress; however, in general, he showed much interest in his work. After his teeth were removed he maintained that he had fewer seizures, a personal opinion given support by certain of his attendants who wondered at his sudden improvement.*

*It may be well to note that several epileptic patients, relieved of teeth containing pulp nodules, have maintained that they had fewer seizures. A female patient, a mixed type of manic depressive, was released from the hospital more than two years ago upon having seemed to show improvement mentally after having several molars removed in which pulp nodules were present. She did not return. While we do not attach any particular significance to pulp nodules as being a cause of epilepsy, we shall with interest note further cases for signs of improvement after pulp nodules have been found and the affected teeth removed.

The pathologic gum section was obtained from the managing director of a local business concern who was very active in his field. He was essentially a nervous and very active worried type. Our classification of the patient was

Fig. 4.

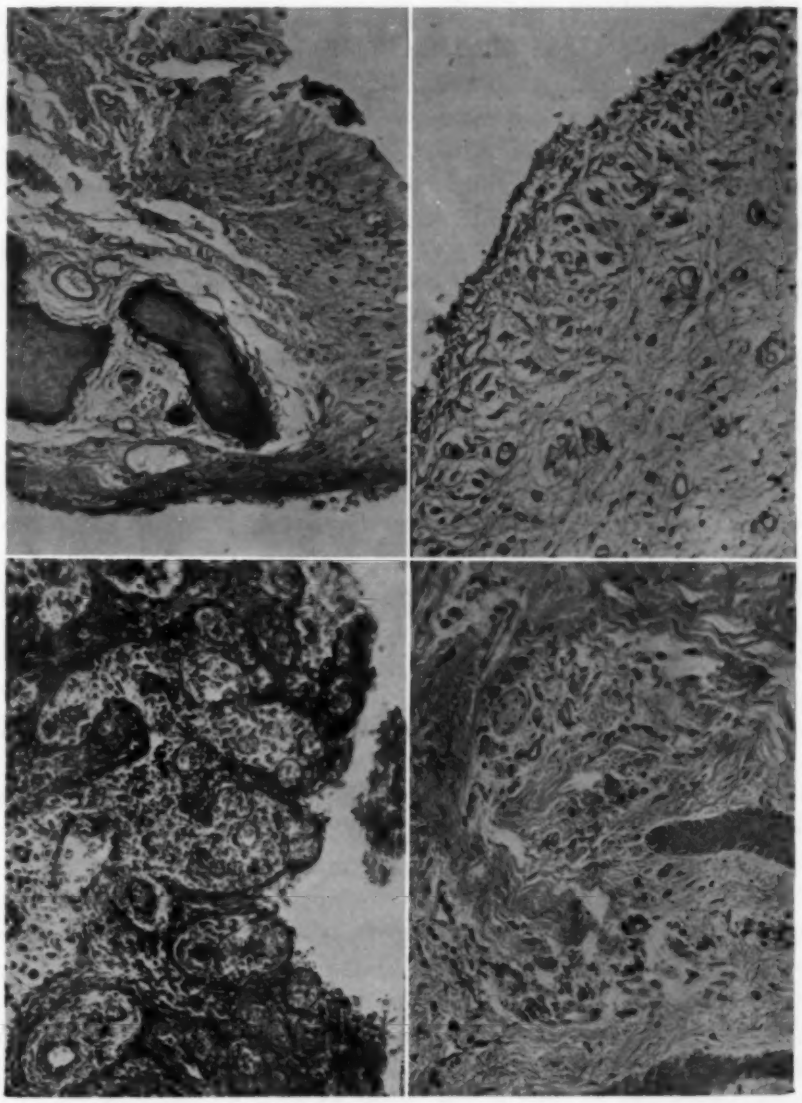

Fig. 5.

Fig. 4.—Comparative normal and abnormal sections of dental pulp. Right, normal section; left, abnormal section. (Magnification, ×200.)

Fig. 5.—Comparative normal and abnormal gingival sections. Right, normal section; left, abnormal section. (Magnification, ×200.)

"emotionally speeded up." Clinically, his gums bled during cycles of exhilaration. Examination of his gingival biopsy during the stimulated period showed capillaries throughout the submucosal stroma, greatly enlarged and engorged in comparison with those of the normal section. If the cross sections of the

endothelium constituting the lumina of the capillary tubules are studied carefully, many openings through which the corpuscles have escaped may be seen. This condition represents a problem of capillary fragility. It is through openings and ruptures between the endothelial cells that the clinical evidence of bleeding occurs. Many corpuscles, most of which are erythrocytes, are seen as having escaped, both within the tissue stroma and also outside the tissue areas. When capillaries are plugged with cells such as these, it is obvious that blood nutritive elements are greatly retarded in their progress through the tubules; normal nourishment to the tissues, as well as drainage from the tissues, must therefore be seriously interfered with. If nutrition and drainage processes are slowed down for long periods, autolysis or tissue changes will probably occur.

In such instances changes will occur away from the normal in which the chemical balance of metabolism is presumed to be maintained adequately. The chemistry of tissues and cells is so finely adjusted that metabolic synchronization will not bear prolonged deviation from normal standards. Such metamorphosis is further hastened by the liberation of toxic metabolites resulting from accumulative cell breakdown. The first reaction toward pathologic metamorphosis is probably due to upsets in the oxygen and carbon dioxide ratios during periods of nutritive fluid stasis. Tissue cells cannot long survive in lowered oxygen media. Apparent maintained hydrogen-ion changes in tissues toward the acid range of from pH 6.0 to pH 6.8 favor further cell changes of a defensive retrogressive nature. Normal replacement cells, which outlive their potencies because of continued energy drain due to accumulated metabolites and short life cycles prompting rapid cell division processes, finally give way to an accelerated multiplication of the more hardy cells, such as the fibroblasts in specialized tissues which produce fibrosis and seriously interfere with normal function. Capillary fragility is increased in the presence of acid media. Anoxemia may be produced in tissues as the result of emotional syndromes; the outward evidence is many times noted in the cyanosis of schizophrenia. Toxic metabolites will give rise to fluid deposition in tissues, owing to similar upsets in the endothelial structures of the venule and lymphatic systems, upsets which in turn create greater pressure upon the cells besides diluting the nutritive media. Edema conduces, therefore, to autolysis, particularly so in the dental pulp where the unyielding dentine walls of the pulp chamber make for circulatory stasis. Instances of capillary fragility are frequently noted in the conjunctiva of the eye, where rather large areas of four or five millimeters become involved with hemorrhage owing to emotional fatigue and strain.

Much more should be said about processes of cell change during pathologic alterations, but space will not permit.

On comparing the average capillary diameter in the normal gum section with the abnormal, it is found that in the normal the diameters range from four to ten microns. In the abnormal, the diameters range from four to as much as sixty microns, the average being about forty.

The advanced process exemplified in the pathologic section is one of congestive inflammation. On the other hand, we wish to emphasize the fact that during the inceptive stages of gingival or tooth pulp metamorphosis the inter-

stitial cellular changes cannot be called inflammatory. Foreign substances do not appear to be present at this stage of pathologic development, nor do bacteria or their toxins. Processes which favor cell transformation changes are entirely within the tissues themselves and have resulted from nutritional irregularities in the cells as outlined previously. In the course of inflammation in advanced cases of the "speeded-up type," media for bacterial growth become more favorable as autolytic processes become established. Hydrogen-ion changes in the tissues, and in pus exudates from pockets about the tooth roots, promote a condition commonly found in advanced periodontosis and may further add to certain types of bacteremia, especially when pH is in the acid range. Tests which we have made on pus exudates show that these secretions are predominantly acid, ranging from pH 6.0 to pH 6.5. An interesting point is that while the pus exudates are within acid ranges and the mixed saliva is also within ranges of pH 6.0, the saliva found at the immediate borders of pockets, not dilated or explored, shows an alkaline range from pH 7.0 to pH 7.8. This seems to indicate a tendency on the part of the gingival glands and saliva to adjust the pH of acid pus exudates toward normal alkaline ranges. Such adjustments may explain why fewer Vincent's infections accompany advanced cases of periodontosis.

The dental pulp pathologic section shows much contrast when compared with the normal. The average size of the capillaries in the normal section ranges from two to eight microns; the pathologic range is from four to fifty microns. The tooth from which this section was obtained had no evidence of decay. The patient was a female, 58 years of age. We classified her as the alternating speeded-up and slowed-down type. The tooth was extracted because of continued pain. Other teeth of this patient were found to have pulp nodules, according to radiographic examination; but this particular tooth was sensitive to a degree at which chewing was out of the question. Beacuse of lack of reason for the intense pain it was decided to section the pulp. No calcific nodule was encountered, but the pulp otherwise showed evidence of pathologic chondromal inclusions of a character sufficient, as seen in the photomicrograph, to account for her pain. In checking the patient's bite, or chewing habits, we could not find a mechanical reason for the condition as shown, such as irregular or malpositioned teeth. Her only interrelating symptoms were pain, her emotional instability, and the disclosed pulp pathology.

Large plugs of chondromal substances are often found to have formed in various parts of the tooth pulp matrix. In studying many areas of thickened chondromal formations, we find remnants of atrophied capillaries occupying a central position with reference to the thickened walls of the endothelium. In more advanced cases thickening has occurred throughout a considerable area, so that the central capillary is almost obliterated by the chondromal growth and is discernible only by adequate micro-refraction. In the largest plugs, almost obliterated tracts appear to be remnants of the former capillaries. The transformation changes that have caused these plugs to form are, we think, changes within the endothelium of the capillary walls. Therefore, in the case of pulp nodules, our assumption is that they originate from capillary endothelial trans-

formation changes due to emotional phenomena exhibiting an alternate speeded-up and slowed-down syndrome. Time-extended vaso play on the capillary walls, exemplified in cyclic changes of overdistention or overcontraction, probably assisted by metabolite changes within the endothelial cells, also in tissues adjacent to the capillaries, is sufficient to produce transformation phenomena in the capillary endothelium without incurring autolysis, owing probably to the alternate periods of nutritional overabundance and starvation. Careful studies under the microscope seem to show that most of the escapes of corpuscles from the capillaries occur on the venule side of the capillaries and within the areas of interchange between the arterial and venule junctions. Most of the engorgement appears to occur near the junctions, but on the arterial side of the capillaries. Areas of fragility seem to occur on the venule side of the capillary, but some are noted on the arterial. From the chondromal stage, calcification of the pulp mass finally leads to clinical evidence of the nodule in the x-ray film. Small nodules continue in growth till they fill and assume the shape of the pulp chamber or canal.

There is a difference between pulp nodules and secondary dentine. Pulp nodules seem to arise as the result of transformation changes within the capillary endothelium and are not at any time fused with the pulp canal or walls. Secondary dentine is a fusion of their dentine substances with the walls of the pulp chamber and continues toward the apex of the root until the pulp chamber is completely obliterated. Secondary dentine forms as the result of odontoblastic activity. Pulp nodules appear to arise as the result of transformation changes in the endothelial cells of the capillaries which carry nutritive substances to the dental pulp.

In attempting to show a difference between the pulp nodule and dentine, we have made refractive index tests of both tissues. We find that the dentine has a refractive index of 1.5579 and that pulp nodules have a refractive index of 1.5483. While main vibrations seem to polarize east and west, we notice a very slight tendency to north and south vibrations in the dentine but not in the nodules.* We consider that the difference in vibrations between the two structures is enough to show that the cellular differentiation of the pulp nodule is dissimilar to that of dentine; but it also shows, because of the refractive index proximity to dentine, that the two tissues have a common origin, i.e., from the mesenchyme. Pulp nodule distribution may be anywhere in the tooth pulp substance. Fig. 6 may illustrate comparatively the difference between the engorged capillary, the collapsed capillary, and the relation they both bear to the normal capillary that freely transports corpuscles. If capillaries are teased apart in microdissection, they bear the resemblances noted in Fig. 6. We are aware that some capillaries are in a state of collapse even in normal tissues, but in the gingiva of the slowed-down type they are considerably more in number than in the normal gingiva.

*The dentine and pulp nodular test substances were removed from the parent structures by means of a dental rose bur. For the dentine, the cuttings were removed so that the cuts were parallel with the long axis of the tooth root. For the nodules, the cuttings made in whatever direction showed no difference in the final refractive index readings. The substances in both instances were tested anisotropically in order to note any tendency toward crystallization, a test that seemed to hold true of the dentine but not of the nodule. The usual Becke test was employed with polarizer set in north and south position. A 10-power Zeiss achromat was employed with a No. 10 eyepiece.

The clinical alveolar differences due to engorgement or collapse are shown in Fig. 1. *B* illustrates the speeded-up type, where certain areas only are subject to resorption and engorgement; *C* shows the condition of even resorption resulting when the greater number of capillaries are collapsed. (Cf. normal *A*.) In the latter illustration, however, an over-all alveolar crest nutritional deficiency exists; and here again not in such a degree as to favor autolysis, yet to such as to produce atrophic changes causing the higher alveolar crests to recede to a level at which the larger vessels can supply adequate nutrition. It will also be noted that the gingival structures do not show hypertrophy but recede in direct relation to, and contact with, the alveolus, and therefore no pockets are found in

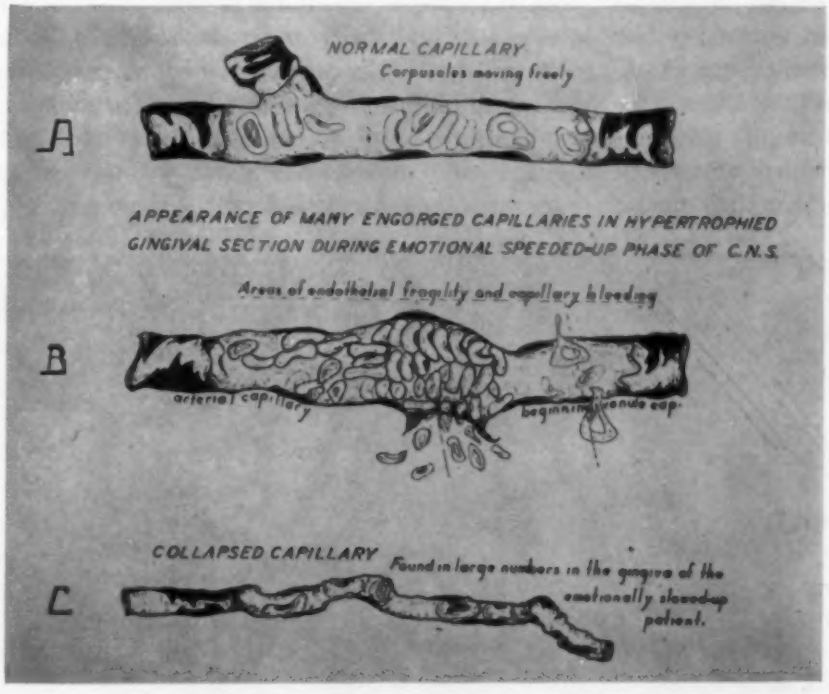
NORMAL CAPILLARY
Corpuscles moving freely
A
APPEARANCE OF MANY ENGORGED CAPILLARIES IN HYPERTROPHIED GINGIVAL SECTION DURING EMOTIONAL SPEEDED-UP PHASE OF C.N.S.
Areas of endothelial fragility and capillary bleeding
B
arterial capillary
COLLAPSED CAPILLARY
Found in large numbers in the gingiva of the emotionally slowed-up patient.
C

Fig. 6.—Comparatively drawn capillary sections illustrating two pathologic conditions as compared with the normal. *A*, Normal capillary; *B*, capillary engorged and plugged with corpuscles, found in the "speeded-up type of emotion"; *C*, collapsed capillary found in the "slowed-down" type of emotion.

the slowed-down type of tissue response. Another point of interest in the slowed-down type is the pH range of the saliva, which in these cases is more within the alkaline ratio of pH 7.0 to pH 7.8. In comparing the capillaries of the emotionally slowed-down type with those of the normal and the speeded-up type, we find that the stereoscopic microscope reveals the capillaries of the slowed-down type to be separated more than those of the latter two, which probably accounts for the pale anemic appearance of the gingiva in comparison to the normal. Virtually no secondary pathogenic bacterial infections are noticed in the slowed-down type as compared with the speeded-up type.

Fig. 7 illustrates a pulp nodule which almost fills the pulp canal at the apical third of a cuspid root. Considerable thickening is noticed about the

apex of the root, caused by excess cementum deposition; and the foramina are almost sealed.

In making pH tests of the saliva a few years ago, we illustrated (in our second publication) graphs showing the fluctuation curves both in quantity and in pH of the saliva under different conditions of emotion. A conclusion we had reached, but by no means finally, was that pH tests were variable in degree at each gland orifice during the test-making period. Also, that the results of individual orifice tests were different in pH from mixed saliva tests. It is as if the saliva were in a constant state of fluctuation in regard to its hydrogen-ion concentration. It also appears that the fluctuations are almost invariably relative to the emotional variations of the patient. This also takes into consideration psychic secretion phenomena in the presence of food odors. When a patient's emotions are speeded up, his saliva presents a more acid reaction; and when his emotions are slowed down, the reactions tend rather to be within the alkaline ranges. At the time alluded to, we said we proposed making several saliva tests per patient, on several separate occasions; also that each test should cover fifteen or twenty minutes. To record continuous saliva readings, it is obvious that they must be made with some form of electrical recording apparatus.

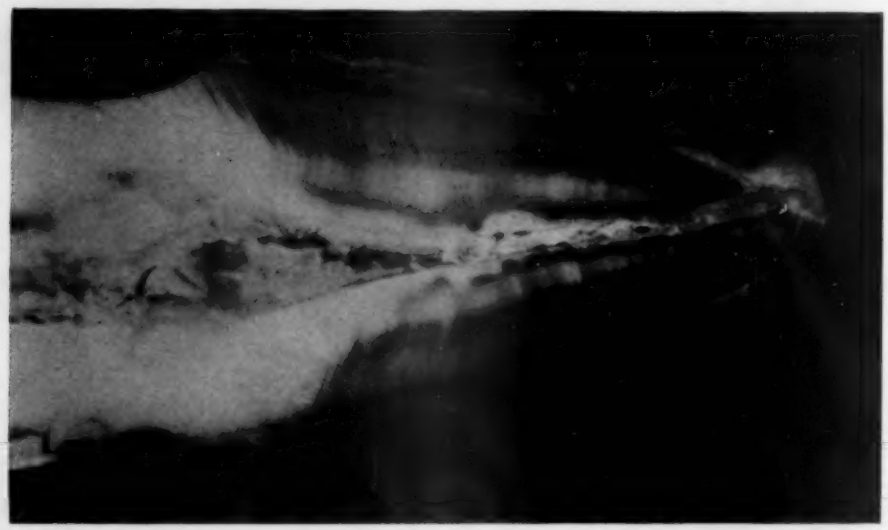

Fig. 7.—Section of a tooth root at apical third. Pulp nodule is seen occluding pulp canal near apex. Thickened cementum is seen to occlude apical foramen.

About eighteen months ago we devised such an instrument and have made many recordings of the nature described. The saliva is an excellent medium for transmitting impulses to the electrodes, owing to pertinent conductive properties of the electrochemical content of the saliva.

In order to know something of what the readings mean, we have made laboratory pH standard solutions which deflect a suspension-type galvanometer negatively and positively from the established norm line at pH 7.0. Our recording apparatus is equipped with a stylus that sets up on each graph the normal line of pH 7.0. As the electrode and amplifier pen are influenced negatively or

positively, the ranges in degree correspond with several laboratory standards. These solutions range negatively in steps of a quarter degree from pH 7.0 to pH 5.5, and positively likewise from pH 7.0 to pH 7.8. In this manner we have a measure by which to establish variables. If fluctuations are above the norm line they fall within the negative acid range; if below, they fall within the positive alkaline range. While making many saliva tests for the purpose of determining pH variations, we noticed that the teeth of patients who demonstrated predominant acid reactions were hypersensitive at the gingival area of the roots. Though no other pathology was present at the gingival regions, other than recession of the alveolus and investing structures, we infer that changes below pH 7.0 provide acid saliva media irritating to the terminal endings of the dentinal fibrils, and that the condition many times is responsible for certain types of odontalgia and pulp hyperemia. Pain of this kind seems to come in cycles; and when it is traced through, the pain cycles are found to be present during periods of emotional speed-up. This again has an interesting correlation with conditions under which gingival pockets have formed, since teeth of this sort are less sensitive, owing very probably to the neutralizing of the acid media by the buffering action of the saliva secretions that abound at the gingival crest borders described previously. The entire progressive pathologic clinical picture is rather clear: first stage, the speeded-up type of emotion; second stage, the bleeding gingiva; third stage, considerable sensitivity and predominant acid saliva; fourth stage, the formation of pockets and no sensitivity because of the alkaline saliva borders found at the crests of the pockets.

We have found that while applications of caustics are of some benefit in relieving these sensitive areas of the teeth at the gingiva, the greater relief is obtained when the saliva assumes a more alkaline reaction in the range of pH 7.0 and when the patient's emotional responses are within normal bounds. A similar condition of sensitivity may be noticed in the eye when the pH of the lachrymal secretion varies from normal.

Electrodes for making saliva tests with the recorder are specially designed to eliminate thermocouple effects and not to polarize. The entire circuit system of the galvanometer, which also acts optically through the amplifier, is therefore constructed of the same kind of metal.

Our hope for the future is to carry through such a number of tests among many patients of all types as to make it possible, in the end, to demonstrate a classifiable correlation between the effects of emotion and saliva variations and to describe patterns for at least the emotionally speeded-up and slowed-down types. Thus far, we are greatly encouraged by the results obtained in saliva recordings and hope to show that consistency of patterns brings aid to early clinical diagnosis. Furthermore, it should help to substantiate verbal information obtained during history taking. There is a great need for more exacting instrumentation for the purpose of examining structures, neuro tracts, cellular reactions, and emotional responses. As we progress in our research it will very probably be necessary to devise both optical and electronic apparatuses for the purpose of cell and tissue reaction studies. At present we are constructing a grinding apparatus for making small, very thin, optical flats that will work with

suitable objectives. These flats, mounted and adjusted in apochromatic objectives, will serve to adjust such patterns and wave length phenomena as are different from the now cut-down quarter wave length commonly employed in the present phase-contrast achromatic objectives. For good tissue culture observation under the phase-contrast microscope, variations in optical refraction and intensity of light transmission in both dark and light microscopic fields are required, depending upon the kind and type of tissue and the wave length of the light source.

We are prompted to design more adequate electronic and optical apparatus not only to be used as aids in nonvital tissue studies themselves, but also, equally important, to tie in with such studies the effects of emotion upon living cells and tissues, and, further, to record, photographically and otherwise, changes in structures during living states.

We have found that the outward disclosures of emotion will not always display or measure the depth or nature of innermost conflict which, during interviews, is for various reasons hidden and masked more often than not.

CONCLUSION

While some aspects of chemotherapy have been worked out as prompted by the findings of this research, we think at this time that the greatest benefits will be found in preventive dentistry. If the cause of dental lesions as we have described them are psychogenic in origin, as we hope to prove after further work, then much can be done in public health and other programs to prevent conditions of pathology from getting started. Through newly designed refresher courses and even in regular curricula of pharmacology and therapeutics, much can even now be done to reach a more normal level of tissue-defensive mechanism and response by using the hypothesis that much of our pathology has a psychogenic origin. We have found it inadequate, however helpful it may be, to make the employment of sedatives, antibiotics, astringents, and bacteriostatic and bactericidal agents the sole method of therapy in dental lesions. Thus far we have seen excellent results when therapy, aspiring to be total, not only has included local medication but at the same time has made room for the fact that, to return to normal, psychiatry and chemotherapy are again and again indispensable to removing the cause of the abnormal and working toward preventive measures. And we must not forget that dietary inadequacy often stems from emotional upsets.

Emotional syndromes of long standing appear to be responsible for the beginning stages of pathologic trends in oral tissues because of the interplay of the sympathetic and autonomic nervous systems and the vaso centers controlling the contractile and chemical adjustment of the capillaries and their endothelia, especially as such phenomena influence and regulate nutrition of the capillary walls and adjacent structures. Changes occurring as the result of nutritional imbalance within tissues produce transformation changes of a cytologic nature, and such changes are retrogressive. Capillary collapse and engorgement when of long duration are phenomena that favor even and uneven resorption of alveolus and gingiva.

Extended cycles of alternate collapse and engorgement of tooth capillaries appear to excite transformation changes within the pulp cells and to result in the formation of chondromal plugs and nodular calcification, with resulting occlusion of the circulation within the tissues.

Fibrosis of the gingiva in certain areas and exostosis of the alveolus and hard palate are also changes due to alternating effects of capillary vaso changes of long duration.

Decayed teeth present pulp problems requiring adequate therapy for the purpose of normalizing the circulation within the pulp before fillings and restorations are placed. It seems important, therefore, to suggest that the ultimate effect of emotion, as well as of bacterial invasion and dietary irregularity, be taken into consideration during therapy. We have found that while it may take a little longer for treatments, the saving of many more teeth than formerly is of greater importance.

Clinical findings and correlating emotional symptom manifestations have made it possible to formulate three classifications of emotion: the "speeded-up type," the "slowed-down type," and the "alternating type." Three different kinds of pathology accompany each classification. They are described in Fig. 2.

It may be possible to demonstrate patterns of emotion, especially the speeded-up and slowed-down types, by means of an electronic recording instrument employing the saliva as a conducting medium.

COMMENT

Our investigation seems to indicate that the same ratio of dental maladies is found among patients of a neuropsychiatric hospital and those of an office practice. The primary development periods of periodontic pathology appear to begin early in life. The important periods are from prenatal to adolescence, with emphasis on prenatal to 6 years of age. Clinical manifestations arise and continue to be more involved after adolescence and as age advances. The most flagrant periods in the clinical manifestations of pathology appear from 30 years of age on.

Dental pulp pathology in terms of our research seems to have a development period from 4 to 12 years of age during early environmental influences. After that time clinical symptoms arise with the most flagrant period at about 30.

Much outstanding work having been done on capillaries and their reactions to various influences, we recommend for study the following publications:

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ANKYLOSED TEETH

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THIS is primarily a report on a case of ankylosed deciduous teeth which I had the opportunity to observe over a period of years, and I believe it brings out some very interesting points. I also have a few other examples of this type of problem showing what has happened when these ankylosed teeth have been allowed to remain in place.

Ankylosed teeth are very commonly called submerged teeth, but the latter term is really a misnomer.

It has been shown from histologic and cephalometric studies that these teeth do not actually submerge. What happens is that the periodontal membrane has been obliterated, and the tooth becomes ankylosed by the new bone formation which extends into the absorbed spaces of the dentine. Therefore, the tooth cannot erupt and the adjoining teeth continue their growth vertically, making it appear that the tooth is sinking further into the bone.

This report is on a child who was, when first examined on Dec. 30, 1936, aged 6 years, 9 months. This little girl appeared to be a normal well-developed child. Tonsils and adenoids were present, and, except for the history of convulsions at 2 months, there was nothing of an unusual nature. She was bottle-fed for ten months and had never been breast-fed.

A complete medical study of this case which was essentially negative was worked up at the Children's Hospital. From all our data, there was no apparent etiology.

Upon examining the mouth clinically, the tissue over the molars appeared like a recently extracted tooth socket which was just healing with only a small opening leading to the covered teeth.

The mother did not remember whether these teeth were ever fully erupted. In checking with the family dentist, I found that the child's first visit to the dentist had been made only a few weeks previously.

The upper half of Fig. 1 shows the lateral jaw x-rays taken at the age of 6 years, 9 months. Three of the second deciduous molars were considerably below the normal occlusal level. The upper second premolars were being displaced or diverted from their normal path. At this time, the first permanent molars were still unerupted.

The lower half shows x-rays taken thirteen months later, and these same teeth appeared to be sinking deeper, causing more displacement of their successors. The first permanent molars were in position and tipping badly. It is interesting to note that these ankylosed teeth have extensive caries.

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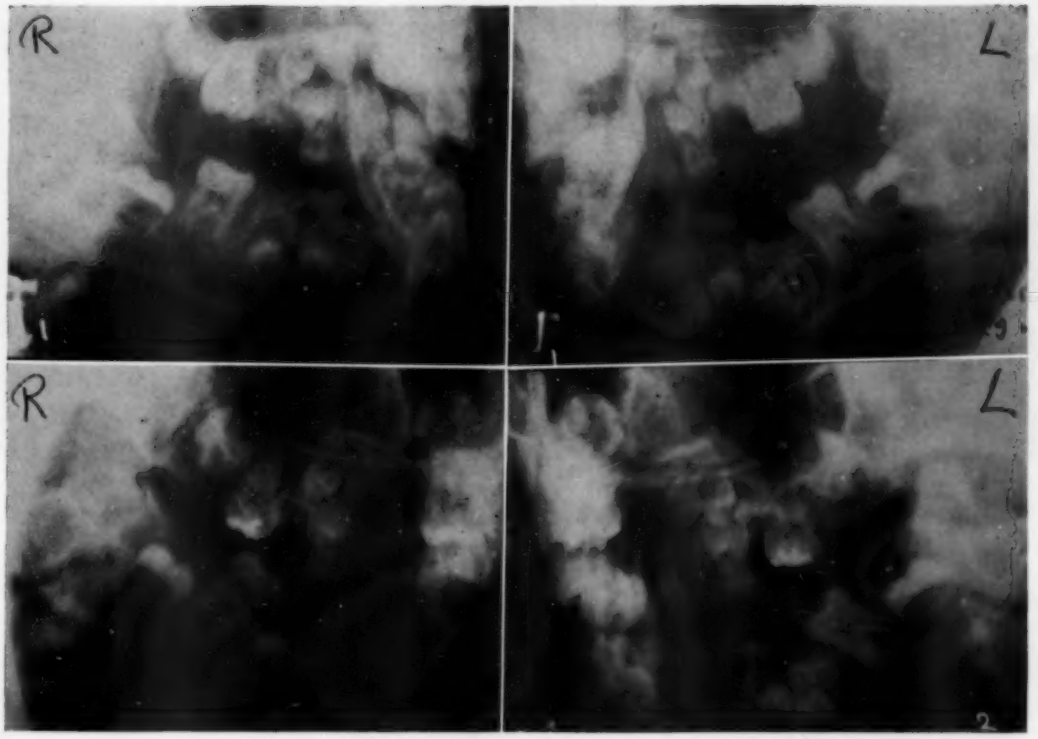

Fig. 1.

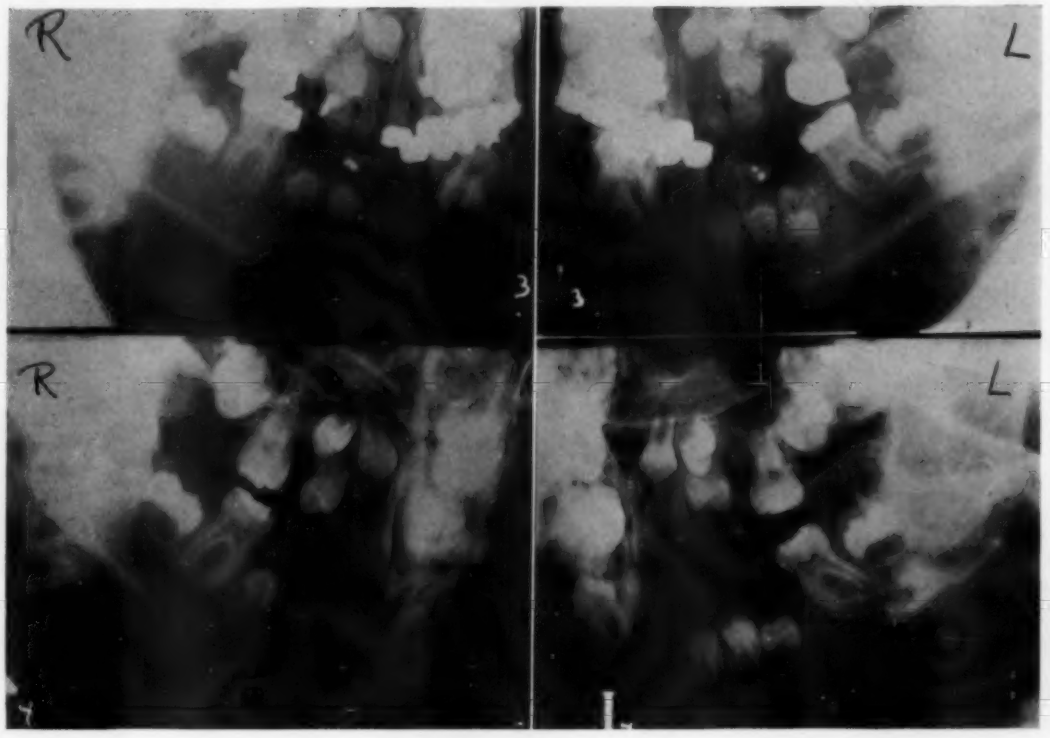

Fig. 2.

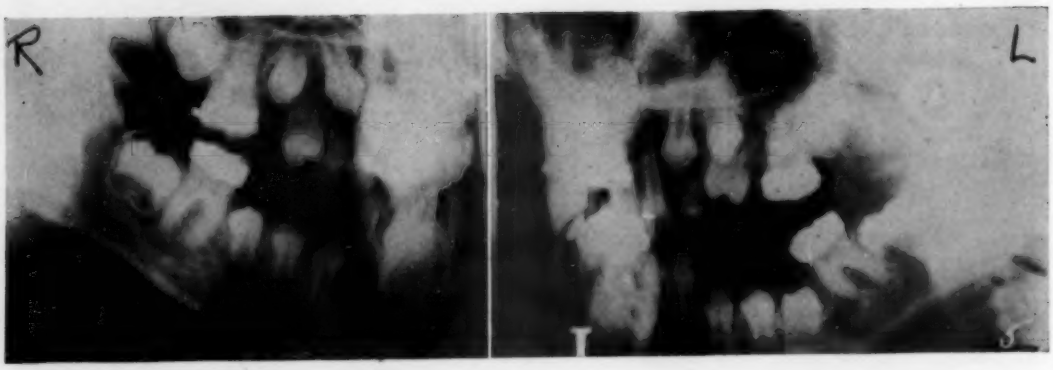

Fig. 3.

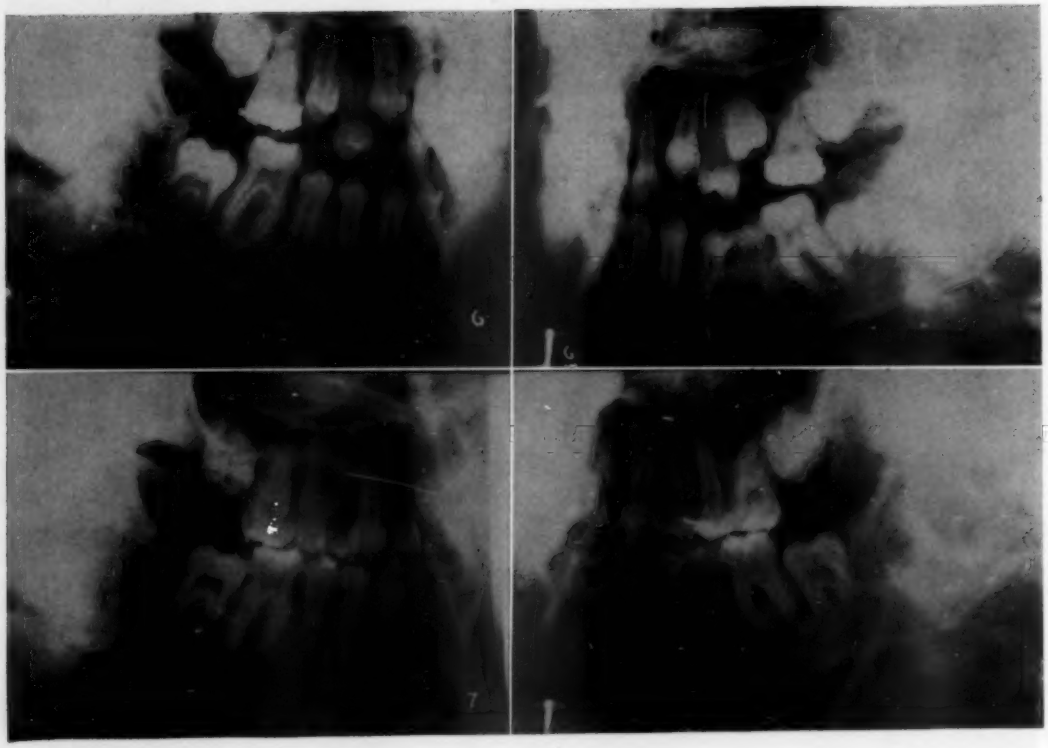

Fig. 4.

The upper half of Fig. 2 shows the unerupted second premolars being diverted further so that they are now stacked up over the first premolars. Appliances were set up preparatory to the removal of the ankylosed teeth, and to preserve the space for the unerupted teeth. The child was then 8 years, 9 months of age. Due to caries and to facilitate the eruption of the unerupted teeth, the remaining deciduous molars were also removed. The lower half shows the case three months after the extractions.

Fig. 5.

Fig. 3 shows x-rays of the upper right second premolar moving distally toward its own space. The left side remains unchanged. There is not sufficient space as yet to receive the second premolar.

The upper half of Fig. 4 at the age of 10 shows the upper right second premolar coming into good position, and on the left side the second premolar is moving away from the first premolar and heading toward its own space.

The lower x-rays taken two years later show how all the premolars are now in their proper position and have reached good occlusal level. The first molars

Fig. 6.

Fig. 7.

Fig. 8.

Fig. 9.

Fig. 10.

Fig. 11.

are also in good vertical position. Premolar retaining band is still in place because of severe rotation the tooth assumed upon eruption.

In Fig. 5 the first set of models are on the left, taken at the age of 6 years, 9 months. They show the uneven outline of the gum tissue. Ankylosed teeth cannot be seen clinically. Models on the right, fourteen months later, show the first permanent molars in place and tipping.

In Fig. 6, models on the left at the age of 12 years, 3 months, show premolars in good position. This girl was seen again recently at the age of 19. On the right we have the models taken at that time. Premolars and molars are in good vertical position and we have a very satisfactory occlusion.

The photographs in Fig. 7 were taken in 1936 of this girl at the age of 6 years, 9 months.

In Fig. 8 are seen photographs of the same girl at the age of 19, showing excellent occlusion and a well-developed face. To the orthodontist, ankylosed teeth present quite a problem, for these teeth do not respond to orthodontic stimuli. The adjoining teeth usually tip and a loss of space results.

The extraction of these teeth is a difficult problem for the oral surgeon. Nevertheless, these teeth should be observed closely, and the important thing to remember is that if they start to cause the displacement of their permanent successors, they should be removed early and the space maintained. If these teeth are truly ankylosed, they will never exfoliate on their own.

Figs. 9, 10, and 11 are of particular interest as examples of neglected ankylosed teeth.

At the age of 9 years, 7 months, the first permanent molar was ankylosed and unerupted. The x-ray on the right is of the same case four years later, showing the first molar locked out considerably below occlusal level, with the second molar tipped and in contact with the second permolar. (Fig. 9.)

In Fig. 10 we find a second deciduous molar ankylosed, and as a result it has prevented the normal eruption of the second premolar.

In Fig. 11 again we find the ankylosed second deciduous molar preventing the eruption of the second premolar and probably responsible for its more horizontal position.

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EVOLUTION OF THE CONCEPTION OF DIAGNOSIS IN ORTHODONTICS

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IN ORTHODONTICS as in any other field of medicine, it is essential to know in advance the symptomatology of the disease in order to assure an adequate and efficient treatment. Evolution in Orthodontia is characterized by the progress made in diagnosis and in the corresponding methods of treatment,'' according to Korkhaus.

Nevertheless, it is necessary to make a distinction, by way of explanation, between the general meaning of diagnosis in the field of medicine and diagnosis within the field of orthodontics, as a specialty. In the former, diagnosis almost always refers to an existing pathologic condition, which becomes evident through the study of the symptoms and signs, or by excluding similar diseases, so as to eliminate errors, in the differential diagnosis. In orthodontics we do not properly face a pathologic entity, but rather irregularities intimately related to the problems of the general development and growth of the organism, particularly the bones of the face and the maxillaries and the evolution of the teeth.

According to Strang, the diagnosis in orthodontics terminates as soon as the existence of a process of malocclusion is recognized. From this point on, all other investigations conducted for a better and more detailed knowledge of the problems are catalogued by him under the term of ''Case Analysis.'' As a matter of fact, diagnosis initiates the study of the analysis of the disease, injury, or disorder, in order to establish conclusions. According to Strang, ''Case Analysis may be defined as a systematic process of study of a disease or malformation that is made subsequent to diagnostic conclusions.''

However, regarded under the generic term of ''diagnosis'' or under the more determining term proposed by Strang of ''Case Analysis,'' one cannot refrain from acknowledging the hard labor rendered, during more than fifty years, by many distinguished colleagues who through their efforts have made possible the high degree of development attained by our specialty.

It is curious to observe how the conception of diagnosis in orthodontics has been influenced throughout its process of development by a series of ideals—ideals and facts which correspond to different conceptions of the norm at different periods. Understanding as norm, according to O. Schwarz as ''that which obeys a specific requirement, which as compared to others, always appears in the same manner,'' in other words, the norm is the rule of conduct established by what is considered normal.

A clear conception of what is normal is of capital importance in the vast field of medicine and of exceptional importance and interest to the orthodontist, who, with this clear conception, must bear in mind the ends he seeks in each case.

Read before the Third Annual Meeting of the "Asociación de Ortodoncistas de Cuba," Habana, February 16, 1950.

Following this line of thought, we could consider five well-defined stages in the evolution of the conception of diagnosis in our specialty:

First stage: The absence of any diagnosis.

Second stage: Purely esthetic diagnosis, with localization in the incisor region.

Third occlusionist stage: Diagnosis based on the articulation of all the teeth of the upper arch, with the corresponding teeth in the lower arch, especially in the region of the molars.

Fourth cephalometric stage: Diagnosis based on the relations of the teeth and the arches with the cephalic segment.

Fifth rationalist stage: Based on functional, esthetic, anatomic, and pathologic reasons, as well as on those concerning growth.

At the beginning of our era and starting with Aurelius Cornelius Celsus (25 B.C. to 50 A.D.), we find the most remote records of the origin of our specialty. Celsus recommended a treatment of dental irregularities by means of digital pressure. Around the same era (23 to 79 A.D.) Plinius was perhaps the first to treat dental irregularities through the use of instruments. Nevertheless, one must necessarily acknowledge how Hippocrates (460 to 377 B.C.) referred to dental irregularities in his writings and their concomitance with skull and palatine malformations.

This first stage extends over many centuries during which sporadic authors appear who refer to dental irregularities, sometimes recommending corrective treatments.

But it was not until a little over two centuries ago that our specialty was increasingly exercised as an empiric art, under the impulse received from such men as Pierre Fauchard, Bernard Boudert, John Hunter, and others, assisted by the ingenious but rudimentary mechanical means of the period.

The etiology of these abnormalities had not yet awakened the interest of dentists in general; the most outstanding professionals did no more than mention the fact that some teeth were out of position in the arch. Some of the better prepared and bolder dentists managed to conceive the mechanical means capable of correcting these deformities individually.

In 1815 Christopher Francis Delabarre became interested in the etiology of the malpositions, recommended a careful examination of the patient, and emphasized the relations between the maxillaries and the jaw in a more precise manner than had been heretofore.

Jean Nicholas Marjolin wrote of abnormalities in 1823, in *Dictionnaire de Médicine,* making a distinction between those depending on dental malpositions and those which are due to abnormal size of the arches.

The first treatise in English was published by Joseph Sigmond in 1825, and it is almost exclusively dedicated to dental irregularities.

By the beginning of the last century some classifications had already been made and interest in the etiology of the defective implantation of teeth had already given fruit, paving the way to the second stage in the progress of orthodontics.

F. Chr. Kneisel was perhaps one of the first to become interested in the problems of diagnosis in 1836, publishing a book in Berlin entitled *Irregular Teeth*. Through a series of classifications, he referred therein to the local abnormalities of the teeth and the relations of the arches to each other. He did not go into detail concerning the relation between the cuspids and fissures in the molar region, treating the matter superficially; he spoke of overjetting arches, of those which are tilted outward and those which are tilted inward, or of those which correspond. In normal occlusion, he referred to the relations between the incisors, and in the treatment he only took into consideration the correct position of the incisors.

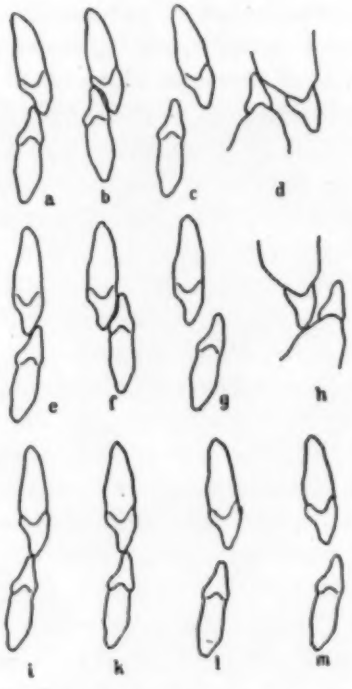


Fig. 1.—Classification of occlusions according to Iszlai (incisors). (From Bruhn, Christian: Ortodoncia, p. 304.)

The classifications published by Welcker in 1862 and by Iszlai in 1891 as bases for diagnosis refer only to the incisors.

The classification by Iszlai (Fig. 1) involves four essential groups:

I. *Enarmosis.*—The lower incisors reach the level of the border of their antagonists in the maxilla, within the outline described by the upper incisors.

II. *Epharmosis.*—The lower incisors reach the level of the border of their antagonists in the maxilla outside of the outline described by the upper incisors.

III. *Prosarmosis.*—The lower incisors are in contact at their borders, with their antagonists.

IV. *Opharmosis.*—The lower incisors do not reach the level of the borders of the upper incisors.

Evidently, in this stage orthodontic diagnosis concentrated all of its attention and interest on establishing it merely upon the position of the teeth at the level of the incisors, inspired by an ideal, the standard of which was purely esthetic. Korkhaus told us in this respect: "To try to establish a classification, based on the antagonism between the groups of incisors, is inadequate, since it rests on more or less local symptoms. It must be understood that in the earlier periods of diagnosing these irregularities, attention was directed towards the incisor region, whereas it was these visible symptoms, which induced patients to visit the dentist, who was compelled to correct these unsightly characteristics, in preference to anything else. The preoccupation of wanting to cure these characteristics only, which were nearly always of a secondary nature, ignoring the more important ones of the occlusion, necessarily had to lead to failure."

The prevailing confusion ended toward the end of the last century, with the gradual appearance of that firm and vigorous personality, whose influence was the greatest to be felt in the field of orthodontics, Edward Hartley Angle.

Angle raised orthodontics to a scientific plane and developed it into a specialty within the field of odontology, through his enthusiasm and his many inventions and his fruitful ideas. He was the father of orthodontics as a science and as a specialty.

To describe his accomplishments would be a lengthy undertaking and it is not the purpose of this article. In so far as the problems of diagnosis are concerned, his conceptions filled a full period and they still exert their influence upon us. Angle created new standards and ideals.

His conception of normal occlusion and of the necessity of maintaining the full number of teeth in both arches as an ideal of beauty and perfection made an ardent enemy of extractions as a therapeutic means toward dental correction. In this regard, his School was dogmatic and inflexible.

Angle's well-known classification, published in 1899, which assumed occlusion at the level of the first molars as a basis for diagnosis, depending upon whether the actual occlusion is normal as in neutral occlusion, or distal as in distoclusion, or mesial as in mesioclusion, represented a positive step of advancement in diagnosis and caused devotees of those days to become more preoccupied by, and involved in, the problems of occlusion.

Angle expounded his ideas on "The First Molar, as a Basis for Diagnosis in Orthodontia" in the year 1905, at the Fourth Annual Meeting of the American Society of Orthodontia. He explained that after extensive studies he had arrived at the conviction that the first molars are, to a certain extent, "the keys of occlusion," whereas their crowns are more developed, their cuspids well defined, their roots long and solidly implanted as no other tooth is, considering their position unalterable, in its relation to the facial cranium. Commenting on these ideas of Angle, Professor Korkhaus declared: "Angle endeavoured to defeat once and for all, all the difficulties envolved in diagnosis, through the application of this incontravertible principle of the unalterableness in the position of the first molars."

The dogmatic and conclusive contents of the complete system of diagnosis sponsored by Angle served as the lever which stimulated many to investigate the reality in the alleged unalterability of the position of the first molars in respect

to the massive facial cranium, on the other hand, and, quoting Korkhaus himself: "Objections arose in Europe before the war against Angle's hypothesis. These objections were, in the first place, the consequence of the failures experienced in treatments administered in accordance with Angle's manual. They complained that, frequently, after the expansion of the maxillaries and the forward projection of the lower until neutro-occlusion, the denture acquired a disagreeable, negroid appearance (Zielinsky, Skogsbory) without the subsequent occurrence of a development of the facial cranium which would regulate this disharmony. Skogsbory presented some cases, of which the course of the treatment has been very interesting. In these, he first obtained normal occlusion, following Angle's process, but subsequently he extracted the first four bicuspids, with the reduction of both arches in order to acquire a satisfactorily aesthetic appearance, in accordance with the wishes of the parents."

Fig. 2.—Angle's "harmony line."

It is necessary to explain, however, that Angle did not completely ignore the esthetic problem, nor the relation of the cranium and the face to the denture, and a proof of this is his extensive chapter entitled "Art and Face" in which he dealt with these problems. In Angle's conception, however, the face acquires its maximum harmony and beauty in normal occlusion, and to Angle this, naturally, amounts to a complete dental formula.

In Angle's "Line of Harmony" (Fig. 2), he tried to establish a gauge for the analysis of the morbid deviations of the profile. Angle's "Line of Harmony" outlined the nasion, subnasal, and the point of the chin.

This position is justified when we know that Angle expounded his ideas on the growth of the bone before the Orthodontic Alumni Society, and he stated on that occasion that the growth of the bone was the most important problem involved in treatments. Should it so happen that the orthodontist does not attain the desired success in the growth of the bone, even in such cases in which the

tooth has been skillfully and satisfactorily moved, it will invariably return to its primitive position, or very near it. "When the normal growth and development of the bone and other tissues has been stimulated intelligently," he added, "all other conditions turn out favorably." He ended saying: "All these ideas are strengthened in my mind after the work accomplished by Dr. Albin Oppenheim, of Vienna."

As previously stated, the doubts which arose and the failures suffered induced many to investigate other diagnostic procedures on which to base treatments, with more solid references on the massive facial cranium, and this brought about the appearance of a new and fruitful stage in the evolution of diagnosis in orthodontics the cephalometric diagnosis stage.

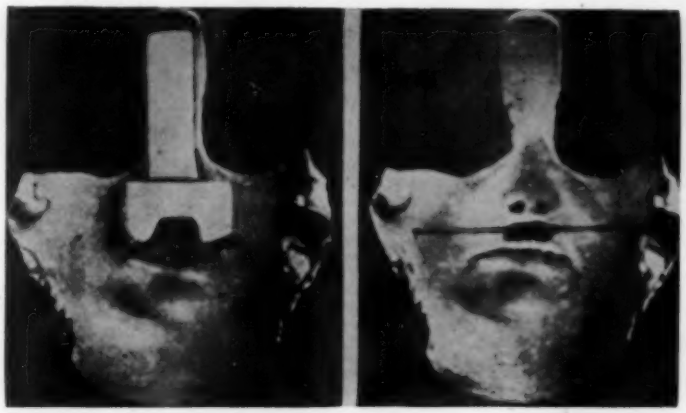
This stage has a first phase which we could call somatic with Case, Lisher, and Van Loon as its leading representatives, and a second anthropometric phase, of which there are numerous outstanding authors, Simon, Schwarz, Dreyfus, Margolis, Andresen, Falch, Cieszynski, Quintero-Bery, De Coster, and others.

Fig. 3.—Analysis of the profile on the mask, according to Case.

Calvin S. Case, a prolific author, was one of the first to demonstrate an outstanding interest in dentofacial relations. Evidence of this fact lies in his article presented in the year 1893, before the Columbia Dental Meeting, entitled, "Aesthetic Correction of the Facial Contour." He made abundant use of masks as a means for diagnosis (Fig. 3), and pointed out the necessity for the extraction of premolars, for the correction of the biprotrusions. He showed interest in radicular movement, and pointed out methods to produce it, in order to attain esthetic and harmonious relations of the features, and was among the first to apply intermaxillary elastics. His classification of the malocclusions explains his opinion in regard to occlusion and facial abnormalities.

"Classification of Dentofacial Deformities," an article read by Lisher before the Dewey School of Orthodontia in February, 1915, explained, in the first place, how maxillary deformities are among the most serious causes of malocclusion.

Van Loon, the Dutch author, severely criticized the methods employed until that date in preparing models, in cutting them by fancy. He pointed out the necessity for preparing them in strict accordance with the facial cranium, in the position in which they appear with the patient. In this regard, he conceived a technique which combined the procedures of the mask and the model coupled



A. *B.*

Fig. 4.—Van Loon's technique for the cephalometric orientation of the model. *A*, Interior of the mask with model placed in actual position; *B*, wire placed on the interior of the mask with palatal mold to determine the position of the upper model. (From Bruhn, Christian: Ortodoncia, p. 317.)

Fig. 5.—Van Loon's technique for cephalometric orientation of the model. Plaster mask with model set in place. Note the Frankfort plane and the planes parallel to it and to the occlusal plane which have been traced. (From Bruhn, Christian: Ortodoncia, p. 317.)

in such a manner that they reproduced the natural position of the teeth, for the purpose of diagnosis (Figs. 4 and 5). Subsequently he applied the reproduction of the Frankfort plane, within this technique. The model of the teeth placed in position with regard to the facial mask was prepared in accordance with the Frankfort plane within a "cranioforum" cube (Fig. 6), in order to establish the diagnosis in relation to the three dimensions of the space.

This procedure was attractive at that moment, when interest in diagnosis within the field of orthodontics was directed toward the knowledge of the position of the teeth with respect to the facial cranium in the three dimensions. Needless to say, the complicated nature of Van Loon's system prevented its generalization.

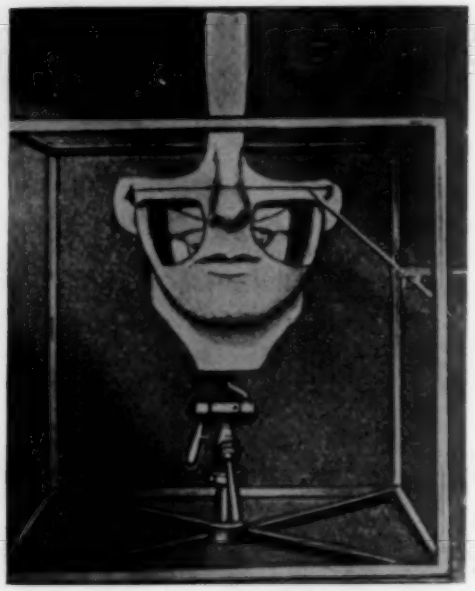


Fig. 6.

Fig. 7.

Fig. 6.—Van Loon's "cranioforum cube" with mask and model placed in the interior according to the Frankfort plane. (From Bruhn, Christian: Ortodoncia, p. 318.)
Fig. 7.—Gnathostatic impression.

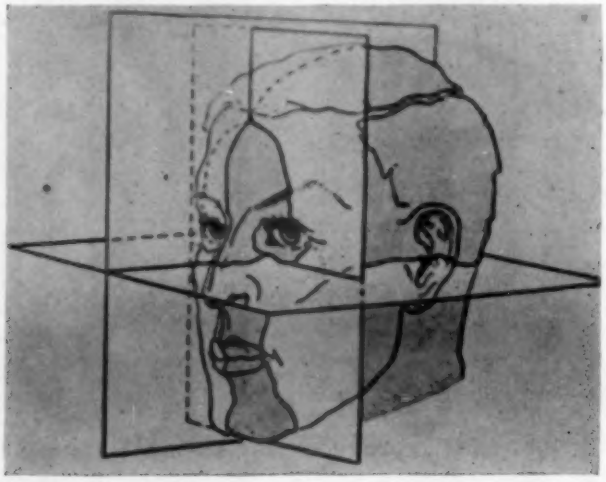


Fig. 8.—Simon's tridimensional analysis of the head using the gnathostat. (From Bruhn, Christian: Ortodoncia, p. 322.)

A few years later, between 1919 and 1921, Paul W. Simon created a simpler and more practical procedure for diagnosis, based on the ideas of his predecessors, which became popularized and spread out among all orthodontists of the

world. From then on, the influence of anthropologic planes acquired great interest in respect to diagnosis. The system created by Simon was complete and available to all, and without great inconvenience to the patient.

Simon created an apparatus which is known to you all, the gnathostat (Fig. 7). With it he managed to suppress the complicated technique of the mask and the troublesome coupling to it of the model, as done by van Loon. Far from this, he conceived a practical procedure for the reproduction of the upper maxillary arch with his apparatus, on which the three basic planes referred to were projected, the Frankfort plane, the orbitary plane, and the sagittal or median plane (Fig. 8), and apparently with the object of further perfecting his ingenious and seductive technique, he created a system of classification of the abnormalities of occlusion, together with the "Orbitary Canine Law" and the "Photostat" as fundamentals for diagnosis of the facial cranium in orthodontics.

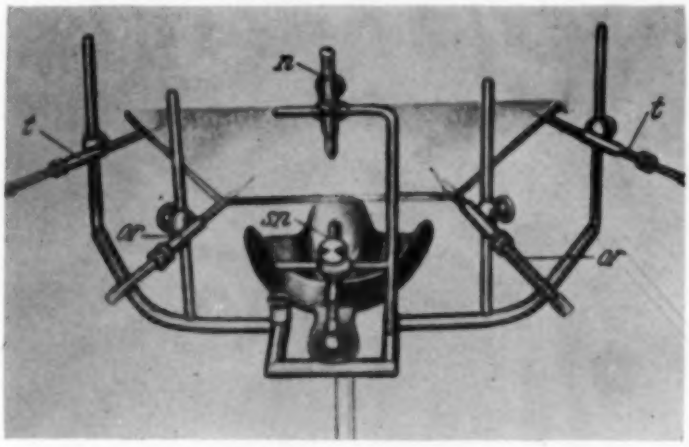


Fig. 9.—R. Schwarz's gnathostat. (From Bruhn, Christian: Ortodoncia, p. 328.)

The orbitary plane permitted establishment of the mesiodistal deviations of the denture. According to Simon, the orbitary plane must pass through the cuspid of the upper canines, in accordance with the standards established through the examination of a great number of normal European dentures, and this he called the "Canine Orbitary Law."

Thence, Angle's theory on the alleged unalterability in the position of the upper first molars was definitely rejected as a means of diagnosing mesio- and distoclusions and was substituted by the relations of the orbitary plane to specified points in the denture.

The prevailing idea of the times as to the possibilities of orthodontics as a therapeutic, capable of stimulating and producing growth and modifications of the bone, and the introduction by Simon of the gnathostat fired the orthodontists of the period with enthusiasm and confidence, in the belief that they were in sight of the solution of all the problems, or at least a great number of the problems, that faced them.

It is curious to observe how from then on the craniometrical science acquired great importance in our field. Its mediums are the models, photography, and teleradiography, guided by points of reference of the facial cranium.

Soon new types of gnathostats began to appear, which tried to introduce more exactitude into the diagnosis, more comfort for the patient, more ease in operation, as the model by Schwarz (Fig. 9), by Dreyfus (Fig. 10), by Wustrow

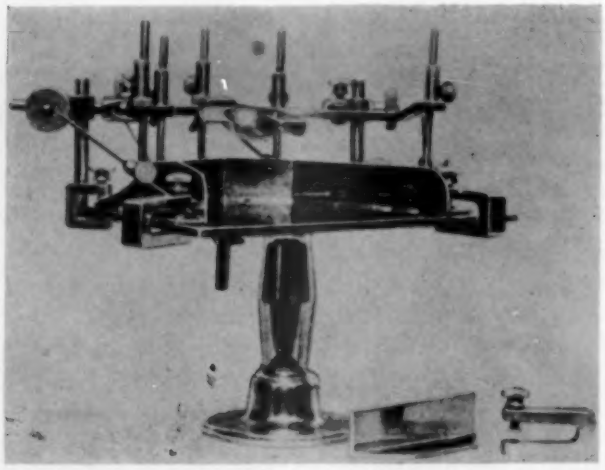


Fig. 10.—Dreyfus' gnathostat. (From Bruhn, Christian: Ortodoncia, p. 330.)

Fig. 11. Fig. 12.

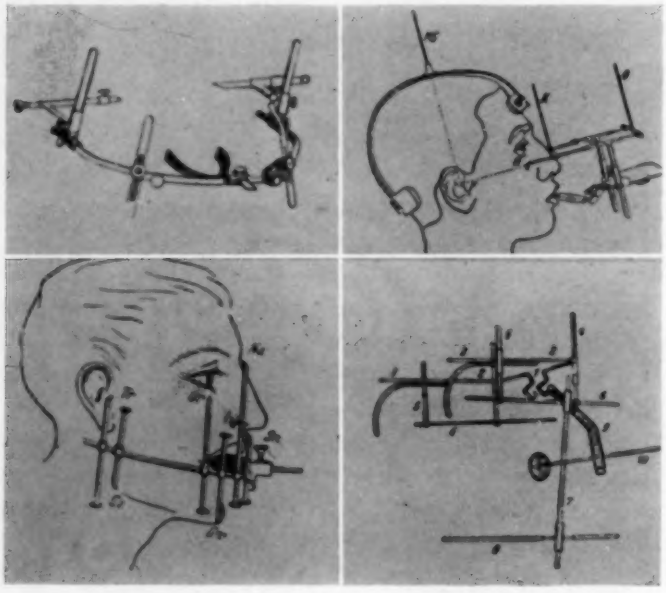
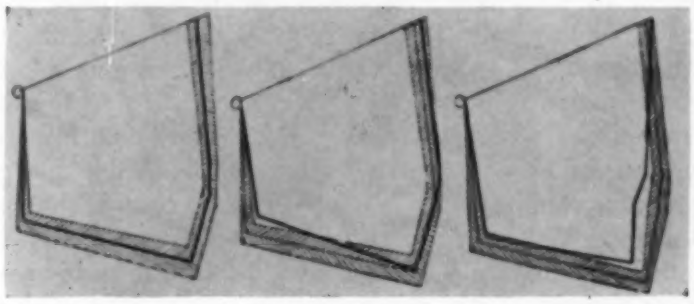


Fig. 13. Fig. 14.

Figs. 11, 12, 13, and 14.—Wustrow's, Cieszynski's, Riechelmann's gnathostats, and Van Loon's prosoposcope, respectively. (From Bruhn, Christian: Ortodoncia, p. 331.)

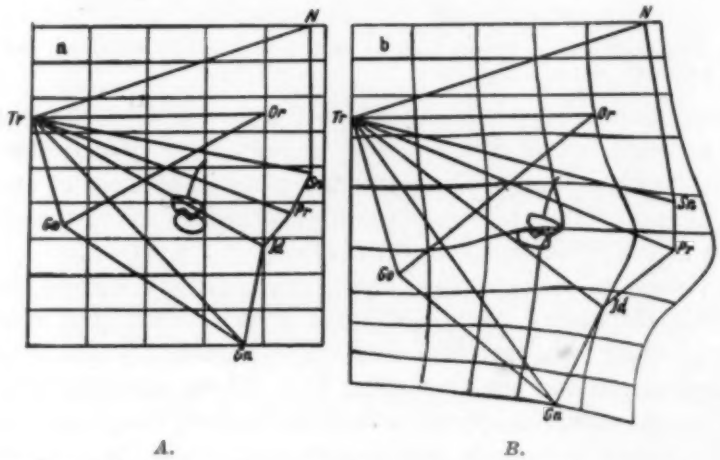
(Fig. 11), the orthognathostat by Cieszynski (Fig. 12), the gnathostat by Riechelmann (Fig. 13), the prosoposcope by Van Loon (Fig. 14), and the gnathostat by Margolis.

The influence of craniometrics and anthropology, as already stated, creates a new means of diagnosis and investigation. Diagrams, geometric-graphic reproductions, and cephalometric radiographs were rapidly distributed directed toward obtaining knowledge of the teeth and the arches. By this procedure averages or standards were established in normal cases, which served as a comparative medium to determine the quantitative degree of deviation in cases affected by abnormalities of the arches. On other occasions they served as a foundation for the investigations carried out by Broadbent and others. In this respect Broadbent stated: "To the thoughtful student of orthodontics it need not be pointed out that the more accurate sciences are those that have passed through the purely qualitative state and have developed enough in the quantitative phase to approach a place among the exact sciences such as chemistry, physics and astronomy."



A. *B.* *C.*

Fig. 15.—Hellman's diagrams of the profile. *A*, Mean or norm of a group of adult Indians; *B*, diagram of an adult Indian compared with the norm; *C*, diagram of the profile of a European compared to the mean or norm of his own group.



A. *B.*

Fig. 16.—De Coster's reticular diagrams. *A*, Mean of normal children aged 12 to 15; *B*, diagram of a patient suffering from distoclusion and upper protrusion.

The procedure of the diagrams and geometric-graphic reproductions was employed by Oppenheim in the study of crania with malocclusion, and in the more recent investigations by Milo Hellman in connection with the modifications of the development of the facial cranium and the dentofacial relations (Fig. 15).

De Coster applied the reticular procedure of crystalography to investigations of this type in orthodontics. In this procedure (Fig. 16), the normal diagram is guided within a reticulum which is composed of a system of lines which are perpendicular to each other, representing the average of a great number of individuals of the same age, sex, race, and constitution, possessed of a normal denture. When the points of reference differ in cases having abnormalities of development and occlusion, the network in the reticulum becomes deformed, getting wider at the points of greater development and becoming narrower in the sections where development has been deficient.

These procedures employed by Oppenheim, Milo Hellman, and De Coster, in their investigations, make reference in all three cases to the projection of the sagittal or medial plane, but other investigators have used the projection of the medial plane in some cases and the horizontal in others, when they did not use the projection of the arches and the maxillae in the three planes, just as this procedure is employed by architects, when working on the project of a dwelling or building. Simon employed this form of diagnosis, by graphic reproduction of the palate and the arches.

The barrenness of these procedures of geometric-quantitative exactitude applied to the human being originated mixed forms, where the graphics and the diagram were combined with teleradiography, photography, and the reproduction of the profile.

These methods of diagnosis induced many investigators to create ingenious and complicated apparatus, for the projection of the arches and the palate, which, considering the refined procedures employed, could compete with many of those created by modern engineering.

On the other hand, on a more modern plane, Broadbent carries on toilsome cephalometric investigations dealing with the process of growth of the cranium and the face, employing the principles of teleradiography applied to the cephalometer (Fig. 17).

These investigations by Broadbent assumed the sella turcica and the Bolton-nasion plane as points of reference, based on his discovery that the most consistent points were at the base of the cranium and not in the face or other regions of the head. He arrived at these conclusion after having made a study of 3,500 white children at the Western Reserve University in Cleveland.

Through the use in series of standardized radiography, during the different stages of growth, Broadbent was able to establish sensational and solid scientific conclusions regarding the problems and the evolution of the teeth and the growth of the cranium and the face (Fig. 18). These investigations, added to those of Brodie, Margolis, Higley, and others, concerning the problems of growth based on cephalometric principles, gave a great impulse to the scientific development of orthodontics, and particularly to the problems of diagnosis in this field.

The rationalist stage, which I have thus named, is in contradiction to the previous stages, particularly the dogmatic and inflexible occlusionist stage. And it must be put on record that in the dictionary of our tongue, rationalism is defined as the doctrine based on reason which excludes mystery and the revelations of the dogma. Rationalism in diagnosis, I repeat, is opening its way in

our specialty through the wide portals of the hard experience of the past. The means of clinical diagnosis continue the same as in the previous cephalometric stage. The models, the photography, and the radiography in all their forms, especially the teleradiography, the case history, and the direct examination of the patient, with variations in form, contents, and valuation, are still in force as auxiliary means of the diagnostician.

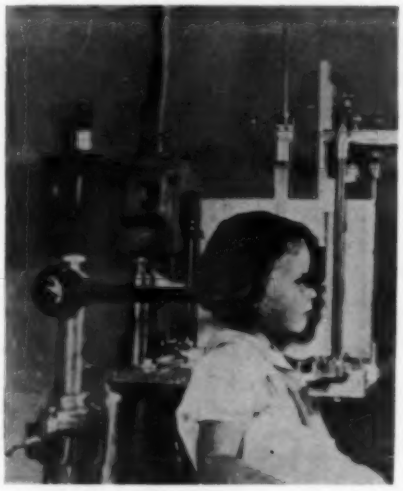


Fig. 17.—Broadbent's cephalometer. (From Dewey, Martin: Practical Orthodontics, p. 217.)

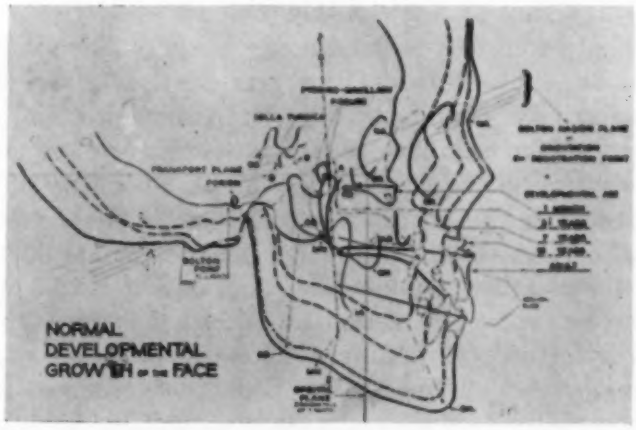


Fig. 18.—Normal developmental growth of the face, according to Broadbent. (From Dewey, Martin: Practical Orthodontics, p. 227.)

But the noteworthy change which bears evidence of the new stage of diagnosis in orthodontics is the evolution toward a new conception of the norm, which is the same as saying a new conception of what is considered normal.

If we analyze this stage carefully, we will arrive at the conclusion that the new conception of what is normal surges spontaneously and logically from a new interpretation of the phenomenon of malocclusion.

This new interpretation of the genesis of malocclusions arrived at in the light of philosophy and science, resting fundamentally on philogenetic, biogenetic, and pathogenetic reasons, leads us by the hand to the complete interpretation of that new conception of what is normal to which we referred previously and which is the fruit of the most advanced clinical and scientific investigations in the field of orthodontics.

Philogenia is the discipline which studies the evolution of the species from its origin. It is a mixture of philosophy, science, and human logic. Starting with the anthropomorphous primates which possibly gave origin to the human species, the somatic variations which have occurred in our species, consistent with the laws of evolution, have been multiple. It is true that nothing can be proved categorically in support of this philogenetic phenomenon, but who amongst the most skeptical mentalities could deny it?

We are the spectators of the activity and the effects of many centuries of civilization bearing on a part of our organisms which is of exceptional interest to us, the maxillaries. The maxillaries have suffered a gradual reduction in their genetic growth potential. This cannot be proved, but it is evident.

Ask the periodontist; and the orthodontist who makes extractions. Why does he make them? And as to he who does not make them, why do his treatments collapse and relapse? And why must he maintain retentions indefinitely? Thus you will receive your explanation.

Herpin's book *Introduccion a l'etude de l'orthodontie,* published in Paris in 1927, speaks of this extensively, and if we search a bit in the pages of the history of orthodontics, we will find many citations by our predecessors who began to see the first rays of light on this problem.

The first one, however, to introduce in our specialty a new conception of the norm, after a zealous clinical investigation, was Charles Tweed, with his theory of the basic bone and his findings to the effect that a problem of discrepancy in the development of the maxillary bones and the number and size of the teeth was the concomitant cause and agent of the immense majority of malocclusions.

These conclusions find their most formidable support in the scientific investigations by Broadbent, which established in a definite manner how and when the development of the maxillaries takes place, and how normal growth occurs in children; in those by Brodie who demonstrated how it is impossible to make the basic bone grow by orthodontic treatment in excess of its genetic potential; in the investigations by Schour and Massler which demonstrated in what region and at which opportunity bone growth actually took place; in those by Margolis, who determined the standard of the angular variation of the mandibular incisors.

The new concept of the norm established by Tweed introduces a new orientation in problems of diagnosis and procedures—radically different in treatment—with the purpose of fulfilling the four fundamental points of this norm:

1. The best in facial esthetics.
2. A mechanically efficient masticating apparatus.
3. Healthy investing tissues that will assure longevity of denture.
4. Permanency of tooth positioning.

This new bearing necessarily implies a revision of the conceptions of diagnosis and treatment which prevailed since Angle, it lays bare the extreme idealism and the evident contradiction existing between the six points on which his conception of normal occlusion rests, and, in rejecting the first one of them, "The full complement of the teeth must exist," orthodontics is released from the impasse in which it was retained for years, into a more rational future which is full of possibilities.

From the study of the general evolution of the conception of diagnosis in orthodontics, it is evident that nothing is absolutely new, nor the absolute creation of a single individual, but rather a vast plan spreading over the centuries, where each one of our most outstanding men has lent his acute intelligence and able hands to render this magnificant monument, which is our specialty, ever more beautiful and perfect.

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Editorial

The Council on Dental Education and the American Board of Orthodontics

DURING the recent meeting of the American Dental Association, Drs. Leuman M. Waugh, of New York, Steven Hopkins, of Washington, and Joseph D. Eby, of New York, appeared before the Council on Dental Education in Atlantic City. It is reported that the Reference Committee considered the recommendation of the Council to approve the requirements for qualification of candidates as submitted by the American Board of Orthodontics.

The following resolution accompanied the recommendation of the Reference Committee on Dental Education of the House of Delegates.

WHEREAS, The American Board of Orthodontics petitioned that Orthodontics be recognized as a dental specialty and this was approved by vote of the House of Delegates, and

WHEREAS, The American Board of Orthodontics has submitted to the Council on Dental Education its requirements for qualification of its candidates, and

WHEREAS, The Council on Dental Education finds that the American Board of Orthodontics meets the requirements for the approval of examining boards in dental specialties as approved by the House of Delegates of the American Dental Association on August 6, 1947, therefore be it

Resolved, that the American Dental Association approve the requirements of the American Board of Orthodontics.

The Reference Committee moved the adoption of this resolution.

Fact Finding Report on Health Services—Orthodontics

Tentative Statement for Use at the Midcentury White House Conference on Children and Youth Prepared by the Committee on Public Health, American Association of Orthodontists.

L. Bodine Higley
Leigh C. Fairbank
Herbert K. Cooper
B. Holly Broadbent
J. A. Salzmann, Chairman,
654 Madison Ave.,
New York 21, N. Y.

FOCUS

THE Midcentury White House Conference on Children and Youth bases its concern for children on the primacy of spiritual values, democratic practice, and the dignity and worth of every individual. Accordingly, the purpose of the Conference shall be to consider how we can develop in children the mental,

emotional, and spiritual qualities essential to individual happiness and to responsible citizenship, and what physical, economic, and social conditions are deemed necessary to this development.

To do this the Conference shall:

a. Bring together in usable form pertinent knowledge related to the development of children and indicate areas in which further knowledge is needed.
b. Examine the environment in which children are growing up, with a view to determining its influence upon them.
c. Study the ways in which the home, the school, the church, the law, welfare agencies, and other social institutions, individually and cooperatively, are serving the needs of children.
d. Formulate, through cooperative efforts of laymen and specialists, proposals for the improvement of parental, environmental, and institutional influences on children.
e. Suggest means whereby these proposals may be communicated to the people and put into action.

Adopted by the National Committee, Sept. 9, 1949.
Amended Dec. 15, 1949.

ORTHODONTIC CARE

I. *Changes in Health Concepts and Practices.*—Orthodontics, a specialty of dentistry, is concerned with the prevention and treatment of dentofacial abnormalities. It seeks to widen the understanding of normal dentofacial growth and development among those concerned with the health of children. Research in orthodontics is mainly concerned with the foregoing, although much experimentation and study are being devoted to the improvement of methods of practice in order eventually to make the service available to all who need it.

Orthodontics as a public health function is defined by the Children's Bureau of the Federal Security Agency[1] as follows:

"The correction of dentofacial deformities when efficiency of the dental mechanism is threatened by a present or potential condition which will cause tissue injury or interfere seriously with function or with mental or physical development."

II. *How Health Service Can Promote Healthy Personality.*—

A. *General:* By reducing the incidence of malocclusion requiring treatment, through the dissemination of knowledge on prevention and by providing treatment for those now affected by dentofacial malformation with its attendant personality involvements.

Many dentofacial disorders, especially where growth and relation of the jaws and facial appearance are concerned, interfere frequently in the development of a healthy personality.

Failure to obtain orthodontic care can give rise to emotional problems affecting the personality development of the child and interfere with adjustment at home, in school, and in society. The feeling of inadequacy occasioned by dentofacial disfigurement can interfere with opportunities for employment.

B. *Extent of the problem*: The various estimates on the extent of malocclusion indicate that 50 per cent of the children and youth in the United States suffer from malocclusion. A study[2] of 265 students at Harvard University who were classified as belonging to a group of *physically and mentally well-integrated*

TABLE I

STATE	EXCLUSIVE	NONEXCLUSIVE
Alabama	8	
Arizona	8	1
Arkansas	5	3
California	239	12
Colorado	21	
Connecticut	27	14
Delaware	5	
District of Columbia	16	2
Florida	30	6
Georgia	18	3
Hawaii	4	
Idaho	3	1
Illinois	105	10
Indiana	32	3
Iowa	27	2
Kansas	20	4
Kentucky	10	3
Louisiana	20	1
Maine	6	2
Maryland	27	2
Massachusetts	71	20
Michigan	81	13
Minnesota	23	2
Mississippi	6	1
Missouri	60	5
Montana	4	
Nebraska	12	2
Nevada	3	
New Hampshire	7	
New Jersey	73	19
New Mexico	3	1
New York	244	83
North Carolina	22	4
North Dakota	1	
Ohio	82	13
Oklahoma	19	4
Oregon	18	2
Pennsylvania	76	18
Rhode Island	10	4
South Carolina	7	1
South Dakota	3	
Tennessee	23	
Texas	86	2
Utah	2	
Vermont	2	1
Virginia	23	1
Washington	27	
West Virginia	12	
Wisconsin	23	1
Wyoming	1	1

students disclosed dental deviations in 57 per cent. Minor malocclusions were common. A dentofacial study[3] of 500 male students at the University of Michigan showed 31.2 per cent to be in need of orthodontic treatment, while some malocclusion was disclosed in 73 per cent of the group. A survey of 119,000

school children in St. Louis[4] disclosed 51 per cent with dentofacial abnormalities of which 80 per cent might have been prevented.

Clefts of the lips and/or palate have been estimated to appear in one out of 800 to 900 births.[5]

C. *Personnel*: There are *1,533* orthodontists in exclusive practice and *267* who include an appreciable amount of orthodontic care in their practice. An unknown number of other dentists perform some orthodontic service in their general practice. Orthodontists are distributed by States as shown in Table I.[6]

Approximately one out of 62 dentists in 18 selected states[7] was in the exclusive practice of orthodontics.

The relative importance accorded orthodontics by official health agencies, the comparatively costly procedures entailed in the service, the lack of funds for special equipment at university dental schools, all combine in affecting the size of available personnel to cope with the problem of dentofacial abnormalities.

TABLE II

STATE	DENTISTS	ORTHODONTISTS
Alabama	545	7
Arizona	139	6
Iowa	1,465	18
Louisiana	681	14
Massachusetts	2,624	42
Mississippi	408	3
Missouri	2,043	40
New Hampshire	212	3
New York	10,355	178
North Carolina	659	12
Pennsylvania	5,545	56
Rhode Island	339	8
South Carolina	331	4
Texas	1,637	45
Utah	280	3
Washington	1,228	24
West Virginia	563	8
Wyoming	108	1

D. *Facilities:* Orthodontic care is provided by *1,533* specialists, *267* partial specialists, and by an unknown number of general dentists. Children receive treatment in orthodontic clinics conducted by official and voluntary hopsitals. Orthodontic care especially in connection with treatment of clefts of the face and palate is provided by a number of states and by private agencies.

E. *Services:* Of the 2,029,574 services provided by dental clinics in 1946, orthodontic visits numbered 18,047. While 704,453 out of 969,076 visits for general dental care in 1946 were at clinics conducted by official agencies, orthodontic clinics in clinics conducted by official agencies numbered 6,431 as against 11,616 visits for orthodontic care in clinics conducted by voluntary agencies.

Orthodontic clinic visits in metropolitan areas numbered 17,321, and only 726 orthodontic clinic visits were made in all other sections of the country. The Northeast and Central sections showed 15,794 visits in 1946. The Southeast had 290; Southwest, 258; mountain and plains states, 1,705; Pacific, 0.[7]

F. *Education in orthodontics*:

1. Professional

a. Courses in orthodontics on the undergraduate level are provided by all dental schools. These courses are intended to provide dentists with knowledge and ability to recognize developing dentofacial disorders and to guide normal dentofacial development.

b. Postgraduate courses in orthodontics are provided by a number of universities. Short courses of the "refresher" type are provided by some universities.

c. Seminars, meetings, and other professional gatherings for the discussion of newer knowledge, methods, and practices are held at regular and stated intervals. Some dental societies are also devoting special attention to furthering orthodontic knowledge among their members.

d. The Committee on Public Health of the American Association of Orthodontists has cooperated with the following:

1. Children's Bureau of the Federal Security Agency in establishing Basic Principles for Orthodontics as a Public Health Activity.

2. New York State Department of Health in the publication of a manual on preventive orthodontics for distribution to dentists.

3. The American Dental Association in the publication of a brochure on questions and answers on orthodontics for distribution to the public.

G. *Research.* Orthodontic research revolves around the following:

a. Studies of factors concerned with normal and abnormal growth and development.

b. Studies concerned with prevention and interception of incipient dentofacial abnormalities.

c. Physiologic factors responsible for the development and post-treatment maintenance of normal occlusion.

d. Reliability and improvement of techniques employed in treatment.

H. *Health education in orthodontics:* a. A brochure on questions and answers on orthodontics was published in 1950 by the American Dental Association. The Committee on Public Health of the American Association of Orthodontists cooperated in this publication.

b. Information for use by public health workers and by teachers has been made available by the American Association of Orthodontists.

c. The Public Relations and Public Health Committees of the American Association of Orthodontists have cooperated with free lance writers in the preparation of informative articles on orthodontics in the lay press.

I. *Financial availability to public:* There are no data to indicate that dentofacial abnormalities occur more frequently in the well-to-do than in the lower income families. Conversely, the appreciation of the value of orthodontic care is practically the same among low income families as among the higher income groups. The highly specialized personnel and comparatively long period of treatment involved tend to make orthodontic care costly.

III. *How Health Service Contributions to Healthy Personality Development Can Be Improved.—*

A. *Professional:* a. Undergraduate training in orthodontics should include basic principles in growth and development and methods and techniques to be employed in preventing and intercepting malocclusion. The early recognition of dentofacial deviations is important in curtailing the length and cost of treatment.

b. Graduate training in orthodontics should be made more generally available.

c. Clinic practice should be extended.

d. Public health dental service by states and local communities should include orthodontic service. This is at present greatly neglected by official health agencies.

ORTHODONTIC CARE PROGRAM

Sept. 1, 1945

The New York Society of Orthodontists is cooperating with the New York State Department of Health in an orthodontic care program for those children whose malocclusions may reasonably be considered as physically handicapping the child. Only cases of severe malocclusion which may fall within the classifications specified below will be considered for eligibility to receive state aid under this program.

I. Congenital cleft palate, with or without surgical interference. Ankylosis of temporomandibular articulation.

II. Extreme structural deformities involving growth and development of the jaws:
   (a) Prognathism
   (b) Retrusion
   (c) Micro or macro development of the jaws

III. Severe cases of malocclusion resulting from mutilation:
   (a) Disease
   (b) Trauma

IV. Severe disfigurement or speech defect as a result of malocclusion which may present a serious obstacle to normal development, education, and employment later in life. Where speech defect is the result of malocclusion, this condition should be called to the attention of the school authorities so that the speech defect may be corrected as well as the malocclusion.

An Advisory Committee, consisting of Dr. Leuman M. Waugh, Chairman, Dr. Henry U. Barber, Jr., Dr. Joseph D. Eby, Dr. J. A. Salzmann, and Dr. Franklin A. Squires, was appointed by Dr. E. S. Godfrey, Jr., Commissioner of Health, to determine the eligibility of cases in accordance with the above classification.

Fee Scale:

Cost per patient first year of orthodontic care including diagnosis, appliances, and treatment not to exceed $200.

Cost for each succeeding year of care not to exceed $120.

Cost for any one case not to exceed $440.

A roster is being established for the guidance of the Department of Health of members of this society who would be willing to cooperate in this program. Will you please complete the questionnaire below, sign your name and return this form to Dr. David B. Ast, Bond Bldg., 76 State St., Albany 7, N. Y.

I am willing to accept patients through the above-mentioned program ☐

I do not wish to accept patients through the above-mentioned program ☐

Signature

Chart I.

In New York State an orthodontic program has been in effect since 1944. At present, there are upward of 1,000 children under treatment who would not have been able to receive care without public health assistance.

B. *Health education:* a. Children and parents should be taught the value of normal dentofacial development to health, appearance, and personality.

b. Habit training and elimination of harmful habits involving or interfering with dentofacial development.

c. Schoolteachers should be provided with information on orthodontics which would afford them general knowledge of its value.

SUMMARY

1. *Definition.*—Dentofacial abnormalities include:

a. Malocclusion of the teeth.

b. Facial abnormalities and deformities due to mal-growth and/or malrelation of the jaws.

c. Clefts of the face, lips, and palate.

2. *Prevalence.*—Conservative estimates indicate that fully 50 per cent of children and youth have some malocclusion and/or dentofacial abnormality which interferes in some degree with function, facial esthetics, and health of the oral structures. Of the foregoing, 20 per cent suffer markedly because of interference with mastication, health of the oral tissues, and facial appearance. The foregoing are frequently associated with personality adjustment, difficulties due to a feeling of inadequacy and "appearing different." At the same time, the severity of the mental reaction of the affected child bears no direct relation to the severity of the condition present.

3. *Need.*—The following should be extended and improved:

a. Knowledge on prevention.

b. Number of professional personnel available.

c. Facilities for prevention and treatment should be extended.

d. Educational information should be more widely distributed.

RECOMMENDATIONS

1. *Education.*—

a. *Professional.* Increased facilities should be made available for increasing the knowledge of general practitioners of dentistry in the prevention and interception of malocclusion, and of specialists in the treatment of manifest dentofacial disorders.

b. *Public health education:* The value of normal esthetic and functional dentofacial components should be explained. Home care of the teeth should be taught. Dentofacial habits of a harmful nature should be discussed.

2. *Service.*—a. Orthodontic care and the treatment of children with clefts of the face and palate should be made available to all children. Public health authorities should be encouraged to include the treatment of dentofacial abnormalities in their programs.

b. Qualified personnel should be employed to diagnose and treat dentofacial abnormalities in the early stages and thus prevent much of the manifest malocclusion existing at present.

c. The school dental examination should include the examination of the occlusion of the teeth, recording tooth and jaw malformations and deformities. Children should be referred to the family dentist or orthodontic specialist for advice or treatment. Care should be provided for those unable to pay for it themselves.

d. Require physicians to report babies born with clefts of the lip and palate so that these may be followed up by health departments.

e. Designate centers for the treatment of children with facial and palatal clefts. Such centers should be established where teams of physicians, dentists, orthodontists, psychiatrists, social service workers, speech teachers, and other participating personnel could work together for the rehabilitation of the handicapped child.

3. *Research programs* should place more stress on simplifying orthodontic treatment so as to make the procedure less complicated and time consuming and consequently less costly. Preventive orthodontic research based on clinical evidence should be encouraged.

Respectfully submitted,
Committee on Public Health,
American Association of Orthodontists.

L. Bodine Higley,
Leigh C. Fairbank,
Herbert K. Cooper,
B. Holly Broadbent,
J. A. Salzmann, Chairman,
654 Madison Ave.,
New York 21, N. Y.

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Department of Orthodontic Abstracts and Reviews

Edited by
DR. J. A. SALZMANN, NEW YORK CITY

All communications concerning further information about abstracted material and the acceptance of articles or books for consideration in this department should be addressed to Dr. J. A. Salzmann, 654 Madison Avenue, New York City

Orthodontic Procedures in the Treatment of Congenital Cleft Palate: By C. Kerr McNeil, L.D.S., *D. Record* **70**: 126-132, 1950.

Congenital cleft palate brings its own peculiar problems with regard to orthodontic treatment.

It is frequently noticed, when dealing with the cleft palate patient, that there may be protrusion of the mandible. An important contributing cause of this feature is the direct result of surgical closure of the cleft of the upper lip. The surgical freeing of the tissues from the upper jaw, and the approximating of the free edges of the lip cleft, with resultant forward displacement of the facial soft tissues, are factors which are almost certain to produce an abnormal relaxation of the tissues of the lower lip. This in conjunction with the intraoral pressure of an enlarged tongue, a condition frequently observed in cases presenting a wide palatal cleft, will result in abnormal forward growth of the anterior part of the mandible. At a later stage, however, the looseness of the lower lip tissues may be eliminated, either by the forward growing mandible, or by the soft tissues themselves regaining normal function, or even by a combination of both processes. This may result in a backward tilting of the lower anterior teeth. These conditions, together with underdevelopment or marked deformity and asymmetry of the maxilla, contribute toward the problems which confront the prosthetist. Difficulties such as these can be overcome, however, and successful results with regard to speech, masticatory efficiency, and esthetic appearance have been achieved by means of combined prosthetic and orthodontic methods.

Cases, which at birth, present clefts involving the palate, alveolar process, and lip, may, at a later stage, undergo drastic changes. Following surgical closure of the lip cleft, the resultant pressure of the soft tissues of the upper lip upon the malformed maxillae may produce lateral collapse of the upper jaw. This collapse of the upper jaw may be further accentuated at a later stage by undue tension of the palatal tissues following surgical closure of the palatal cleft. It is obvious, then, that the dentition of these patients will be abnormal, and orthodontic treatment may be indicated.

During mechanical correction of the abnormal upper arch, clinical observation and radiologic examination have revealed that deposition of new bone occurs in the region of the free edges of the alveolar lesion. In certain cases, this new bone has provided suitable sites for teeth which have been in malposition but which are made to take up natural position by orthodontic means. In view of these findings, it would appear that indiscriminate extraction of teeth which erupt in the region of the cleft is contraindicated, and should be carried out only after due consideration. It is my view, however, that prolonged orthodontic treatment for the correction of anomalies of dentition is undesirable when dealing with the young cleft palate patient. One of the most important end results

aimed at is the attainment of normal speech as expeditiously as possible. In spite of a satisfactorily functioning soft palate having been provided by surgical procedures, the patient may still be incapable of normal speech because of the presence of malpositioned teeth. These, together with the orthodontic appliances required for their movement, will tend to inhibit normal functioning of the tongue and lips. Should the conditions exist over a prolonged period, as is usual in orthodontic practice, then it may be that permanent impairment of speech will result.

In the type of case under consideration, conditions may be further complicated by the presence of perforations or persistent fissures in the hard palate even after surgical intervention, breakdown of tissue having resulted in the formation of these deformities. It is generally accepted that closure of these defects, or the elimination of their harmful effects, can be achieved only by surgical means or by the fitting of obturators. Even in cases where expansion of the upper arch has been indicated, results have shown that closure of the palatal deformity and expansion of the arch are processes which may be carried out conjointly.

The reaction of bone to traction or pressure is deposition and resorption. It is known that resorption of bone takes place at a greater pace than that of the formation of new bone.

When considering orthodontic measures as applied to the treatment of congenital malformation of the oral structures, mention must be made of cases in which clefts extend through the alveolar ridge in two places with resultant separation of the premaxilla. It frequently happens in these cases, following surgical closure of the lip condition, that the premaxilla still protrudes abnormally. In many instances the tension of the tissues of the repaired lip is sufficient to push the premaxilla into a normal position, or retain it in that position in cases in which it has been placed in correct alignment by surgical means. Sometimes, however, the tension of the lip tissues brings about further deformity of the upper jaw by exerting pressure on the buccal aspect of the maxillae, thus causing lateral collapse of the upper jaw toward the median line. This collapse can occur rapidly, as can be readily understood when the cleft condition of the palate is taken into account. The result may be, then, an approximating of the free ends of the maxilla, thereby bringing about a diminishing of the alveolar gap, thus preventing the premaxilla taking up a normal position.

It seems obvious, then, that the application of measures which will prevent the occurrence of this series of undesirable events will be of definite value toward the attaining of satisfactory end results. Following clinical investigation, it has been found that orthodontic procedures may be utilized to advantage. It is essential, of course, that these mechanical measures be introduced at an early age. Since it is known that the first period of acceleration in growth of the jaws takes place from birth to seven months, it would seem desirable that commencement of these methods be made during this period. It has been found, however, that favorable results may be achieved at a later age, so long as the alveolar gap is still sufficiently wide to accommodate the premaxilla. That these procedures form an important contribution toward obtaining satisfactory end results seems certain. The chances of the upper arch growing to normal size and shape are greatly increased. This will tend to lessen problems of dentition; will make for conditions favoring better speech; contribute largely to a successful esthetic result; and will eliminate the necessity, as is sometimes indicated, for surgical removal of the premaxilla, an operation which may result in conditions which make for complications and problems with regard to subsequent prosthetic procedures.

Practical application of the premaxillary retraction appliance, it has been found, is tolerated well, even by the very young child.

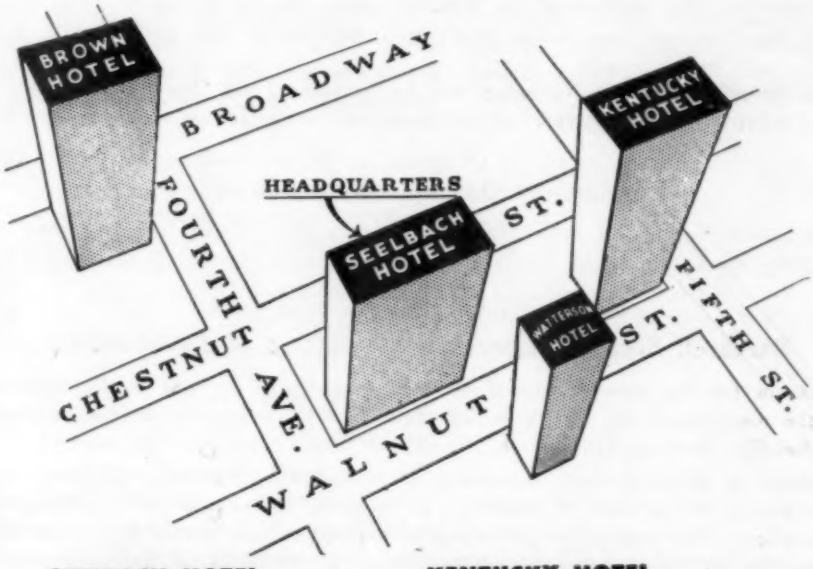
Now, it has been shown that the cleft palate patient may present various anomalies of dentition. Eruption may be delayed; teeth malpositioned; supernumerary teeth may be present; teeth are frequently found in close proximity to the cleft; teeth may even erupt in the cleft. It follows, then, that some patients may require extraction of certain teeth and the fitting of some form of prosthesis, while others may have to undergo orthodontic treatment for the correction of malpositioned teeth. Since it is known that surgical closure of hard palate clefts frequently produces further abnormalities of dentition, and since it has been shown that closure of hard palate defects may be achieved by mechanical stimulation of the growth impulse, it would appear that there exists a strong argument in favor of the surgeon concentrating, in many cases, mainly upon the obtaining of a satisfactorily functioning soft palate, thus leaving the restoration of the hard palate deformity to the dental operator. Moreover, when the various problems and complications associated with cleft palate work are considered in all their aspects, an even stronger argument would appear to be in favor of the closest possible cooperation between surgeon, plastic surgeon, and dental specialist. Only in this way can real service be rendered, service which is amply repayed by the gratitude of the afflicted, in that they are enabled to overcome the distressing effects of their deformities; service which brings its reward in the knowledge that the young patient may be enabled to look forward to a future unhampered by the effects of his disability.

News and Notes

American Board of Orthodontics

The 1951 meeting of the American Board of Orthodontics will be held at the Seelbach Hotel in Louisville, Ky., April 18 through April 22, 1951. Orthodontists who desire to be certified by the Board may obtain application blanks from the Secretary, Dr. C. Edward Martinek, 661 Fisher Bldg., Detroit 2, Mich. Applications must be received not later than March 1, 1951, for consideration at the Louisville meeting.

Meeting of the American Association of Orthodontists, Louisville, Ky., April 23-26, 1951



SEELBACH HOTEL
Single: $4.00, $5.00, $6.00, $6.50, $7.00
air-conditioned rooms start at $5.00
Double: $7.00 to $11.00
Twin: $7.00, $8.00, $9.00, $10.00, $11.00
air-conditioned rooms start at $8.00
Suite: $18.00 (six only)

WATTERSON HOTEL
Single: $3.25, $3.50, $4.00, $4.50
Double: $5.50, $6.00, $6.50, $7.00
Twin: $6.50, $7.00, $8.00
Suite: $8.00, $10.00, $12.00
air-conditioned rooms $1.00 extra

KENTUCKY HOTEL
Single: $3.50 to $6.00
Double: $5.50 to $10.00
Twin: $7.00 up
Suite: $14.00 to $18.00
Room for three people: $9.00
air-conditioned rooms $1.00 per day extra

BROWN HOTEL
To secure rates and reservations at the Brown Hotel communicate direct with hotel

The above picture shows the location of the hotels. Louisville is centrally located—so are the hotels. Reservation cards will be sent to the members. Reservations should not be sent directly to the hotels, but to Dr. John A. Atkinson, 896 Starks Bldg., Louisville 2, Ky.

Prize Essay Contest, American Association of Orthodontists

Eligibility.—Any member of the American Association of Orthodontists; any person affiliated with a recognized institution in the field of dentistry as a teacher, researcher, undergraduate or graduate student shall be eligible to enter the competition.

Character of Essay.—Each essay submitted must represent an original investigation and contain some new significant material of value to the art or science of orthodontics.

Prize.—A cash prize of $500 is offered for the essay judged to be the winner. The committee, however, reserves the right to omit the award if in its judgment none of the entries is considered to be worthy. Honorable mention will be awarded to those authors taking second and third places. The first three papers will become the property of the American Association of Orthodontists and will be published. All other essays will be returned.

Specifications.—All essays must be typewritten on 8½ by 11 inch white paper, double-spaced with 1 inch margins, and composed in good English. Three copies of each paper, complete with illustrations, bibliography, tables, and charts must be submitted. The name and address of the author must not appear in the essay. For purposes of identification, the author's name, together with a brief biographical sketch which sets forth his or her dental and/or orthodontic training, present activity and status (practitioner, teacher, student, research worker, etc.), should be typed on a separate sheet of paper and enclosed in a sealed envelope. The envelope should carry the title of the essay.

Presentation.—The author of the winning essay will be invited to present it at the meeting of the American Association of Orthodontists to be held at Louisville, Ky., April 23-26, 1951.

Final Submission Date.—No essay will be considered for this competition unless received in triplicate by the Chairman of the Research Committee on or before March 1, 1951.

WENDELL L. WYLIE, Chairman, Research Committee,
American Association of Orthodontists,
University of California Medical Center,
San Francisco 22, Calif.

Research Section, American Association of Orthodontists

A session for the presentation of research papers will be held on Monday, April 23, 1951, at the meeting of the American Association of Orthodontists, at the Seelbach Hotel in Louisville, Ky.

Members of the American Association of Orthodontists, persons affiliated with recognized institutions in the field of dentistry as teachers, research workers, undergraduate or graduate students who wish to participate in this program are invited to submit the following information for the consideration of the Committee, to Dr. J. A. Salzmann, 654 Madison Ave., New York 21, N. Y.: (a) the exact title of your paper; (b) the institution where this work was done; (c) an abstract of your paper of not more than 50 words.

Wendell L. Wylie, Chairman,
J. A. Salzmann,
R. E. Moyers,
Committee on Research,
American Association of Orthodontists.

Philadelphia Society of Orthodontists

A meeting of the Philadelphia Society of Orthodontists was held on Dec. 11, 1950. The meeting consisted of a series of clinics by the members followed by dinner and general discussion.

Officers of the society for the year 1951 were elected as follows:

President, E. O. Rosenast----------Wilson Bldg., Camden, N. J.
Vice-President, Augustus L. Wright----------255 S. 17th St., Philadelphia, Pa.
Secretary-Treasurer, John M. Jackson----------Medical Arts Bldg., Philadelphia, Pa.
Librarian, Richard H. Stucklen----------908 Delaware Ave., Wilmington, Del.

Testimonial Banquet Honoring James David McCoy

A testimonial banquet honoring James David McCoy will be held at the Palace Hotel on Monday, Feb. 19, 1951, the first day of the meeting of the Pacific Coast Society of Orthodontists.

All of Dr. McCoy's friends in the A. A. O. are most cordially invited to attend, and assist the West Coast in honoring a man who has spent most of his life in advancing the orthodontic profession, and who has been an inspiration to all.

James David McCoy, D.S., D.D.S., F.A.C.D., was born Sept. 7, 1884, in Orange, Calif. He was formerly Professor of Orthodontics and Radiography, College of Dentistry, University of Southern California; Past-President of the Pacific Coast Society of Orthodontists, American Association of Orthodontists, and American Board of Orthodontics; Associate Editor, AMERICAN JOURNAL OF ORTHODONTICS; author of *Applied Orthodontics, Dental and Oral Radiography,* and over fifty published articles pertaining to orthodontics.

He began the exclusive practice of orthodontics in 1906 at Los Angeles, Calif., and is now practicing in Beverly Hills, Calif. This year marks the forty-fifth year of his very active practice of orthodontics.

Dr. McCoy is one of the most prolific contributors to orthodontic recorded literature of all times and few can equal such a record. He contributed 101 papers to dental literature, 50 of which appeared in the AMERICAN JOURNAL OF ORTHODONTICS. Other journals in which his articles appeared include the *Pacific Dental Gazette, Dental Cosmos, American Orthodontist,* and *The Journal of the American Dental Association.* He has also written two textbooks, three editions for one and six for the other.

Pacific Coast Society of Orthodontists

The twenty-second general meeting of the Pacific Coast Society of Orthodontists will be held at the Palace Hotel, San Francisco, Feb. 19, 20, and 21, 1951. The program follows:

FIRST DAY, MONDAY, FEBRUARY 19

A.M. *Morning Session, Comstock Room*

8:00 Registration

9:00 Call to Order

Address of Welcome. Ernest G. Sloman, Dean, College of Physicians and Surgeons, San Francisco, Calif.

9:15 President's Address. C. F. Stenson Dillon, Hollywood, Calif.

9:30 Charge to New Members. Vernon L. Hunt, Eureka, Calif.

10:00 Essay: Preliminary Discussion and Standardizing Office Paper Work. A patient will be carried through from the time of the first appointment until completion. In lieu of a summary, an illustrated booklet will be given each person attending.

Brooks, Bell, D.D.S., Dallas, Texas; Baylor College of Dentistry, 1925; Dewey's School of Orthodontia, 1925; Professor of Orthodontics, Baylor College of Dentistry since 1928; A.B.O., 1935; Past-President of Southwestern Society of Orthodontists; Honorary Member, Asociacion Mexicana de Ortodoncia.

11:00 Recess

11:10 Psychological Aspects of an Orthodontic Practice. A discussion of some of the psychological factors from the viewpoint of the patient, the parent, and the orthodontist. Brooks Bell, Dallas, Texas.

12:00 Past-Presidents' Luncheon. Sidney B. Hoskin, Chairman

P.M. *Afternoon Session, Comstock Room*

1:45 Essay: The Removal of Maxillary Second Molars as a Logical Procedure in the Reduction of Superior Protractions. Malcolm R. Chipman, Spokane, Wash.
Discussion. Fred E. McIntosh, Los Angeles, Calif.

3:00 Essay: Advanced Technique of the Edgewise Arch Mechanism.

A. Fabrication of appliance on typodent

B. Progressive steps in treating various cases

C. Classification of malocclusions for treatment planning
Glen W. Foor, Richmond, Calif., William E. Grenfell, Oakland, Calif., and Robert B. Murray, Berkeley, Calif.

Presentation of this paper is on behalf of the University of California, Department of Orthodontics.

4:00 Table clinics to compliment the preceding essay. English Room. (This clinic will *not* be repeated at the General Clinic Session.) Glen W. Foor, Director, William E. Grenfell, and Robert B. Murray

7:00 Stag Banquet Honoring Dr. James David McCoy. Bohemian Club

TUESDAY, FEBRUARY 20

Morning Session, Comstock Room

A.M.

9:00 Essay: The Direction and Distribution of Forces in the Universal Appliance. Illustrated essay analyzing the forces employed in the several methods of retracting canines in extraction cases; sectional arch mechanics and full arch action. Thurman L. Hice, Wenatchee, Wash.

10:00 Essay: A New Approach in the Analysis and Plan of Treatment of Malocclusion in Mixed Dentition. Mixed dentition treatment must be focused toward guiding growth and eruption of the teeth, thereby producing a better-balanced occlusion. If this is accomplished at an early age, it will result in a better development of the forces of occlusion.

Silas L. Kloehn, D.D.S., Appleton, Wis., Marquette University Dental School, 1924; Graduate Orthodontics, University of Illinois, 1936; Editorial and Publication Board of American Association of Orthodontists; Business Manager, *Angle Orthodontist.*

12:00 Round-Table Luncheon, Rose Room. J. Kester Diment and Arnold E. Stoller, Co-chairmen.

Afternoon Session, Comstock Room

P.M.

1:30 Essay: Endocrine Problems in Orthodontics. A metabolic study of over one hundred random orthodontic problems. A printed synopsis will be given each member attending.

Benjamin N. Tager, M.D., Tucson, Ariz., B.S. and M.D., Yale University, 1932; Practice of Medicine with emphasis on metabolic and endocrine disease since 1935; Shelton Clinic, 1935-1950; Professor of Endocrinology, U.S.C., School of Dentistry, Graduate Division, 1940-1943; Associate Professor of Medicine, U.S.C., School of Medicine, until 1950; Member Association of Internal Secretions; American Board of Internal Medicine; author of numerous publications dealing in growth and development.

In addition to participation in the Tuesday noon round-table discussion, Dr. Tager will be available for personal discussion in the President's Suite Tuesday evening.

2:30 X-ray Moving Picture: The Physiology of Incision, Mastication, and Deglutition. Through the courtesy of Bernard Jankelson, D.M.D., Seattle, Wash., who conceived and created this unusually revealing explanation of the enumerated functions.

Presented and narrated by Alton W. Moore, Seattle, Wash.

3:00 Essay: The Evaluation of Orthodontic Treatment by Serial Cephalometric Head Films. The technique and method of superimposing serial head films. The various growth sites of the head will be discussed along with their influence upon the correct methods of superimposing the head films. A number of case histories will be presented illustrating the cephalometric evaluation of various types of tooth movement by different methods of orthodontic therapy.

Alton W. Moore, Department of Orthodontics, School of Dentistry, University of Washington.

4:00 Essay: Adaptation of Labial Wires in Multibanded Techniques. A general résumé of the need for, and complications in, multibanded techniques—detail on the need for accuracy in positioning dental units, either by bracket placement or wire adaptation—inclination of buccal and labial surfaces to occlusal plane—determination for the individual case—bracket placement—technique of wire manipulation. Donald C. MacEwan, Seattle, Wash.

WEDNESDAY, FEBRUARY 21

A.M. *Morning Session, Comstock and English Rooms*

9:00 to 12:00 Group and General Clinics

Group Clinics

Pre-forming and Torquing as Used in the Universal Technique. The Northwest Orthodontic Study Club.

A. E. Stoller, Director
G. A. Barker
L. H. Chapman
Richard Cline
E. B. Faxon
T. L. Hice
J. P. MacKinnon
B. E. Nickells
Percy Rumball
S. J. Boyd
M. R. Chipman
R. C. Cooper
H. J. Hammond
J. M. Keenan
D. C. MacEwan
J. E. Richmond

Treatment of Class II Extraction Cases With the Edgewise Arch. The Pacific Northwest Junior Tweed Study Club

Paul D. Lewis, Director
F. F. Crutcher
R. O. Gothenquist
H. C. Dahl
R. C. Philbrick

Advanced Technique of the Edgewise Arch Mechanism.* University of California, Department of Orthodontics.

G. W. Foor, Director
W. E. Grenfell
R. B. Murray

Rational Orthodontics.

E. F. Lussier, Director
R. A. Lussier
T. N. Engdahl

Progressive Clinic Illustrating the Advisability of Removing Three Dental Units in the Reduction of Certain Types of Extreme Superior Protraction. Mechanism Employed: Universal. Southern California Study Group

Ben L. Reese, Director
B. L. Barkelew
C. F. S. Dillon
A. J. Gray
Sydney Cross
R. J. Gawley
H. M. Spears

Treatment of Class II Nonextraction Cases. Southern California Component of the Edward H. Angle Society of Orthodontists.

General Clinics

Early Versus Late Treatment. Silas J. Kloehn, Guest Clinician, Appleton, Wis.

Sliding Sleeve Attachment for Twin Arch Mechanism. Howard Yost, Guest Clinician, Grand Island, Neb.

Aids in Final Repositioning in Settling of Treated Cases. Harry Carlson.

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*See program, Monday, Feb. 19, 1951, 4:00 P. M.

Extraction of Maxillary Second Molars. M. R. Chipman and F. E. McIntosh.
Mixed Denture Treatment, pros and cons. R. M. Curtner.
Distal Sectional Movements. S. B. Gray.
Direction and Distribution of Force in the Universal Appliance. T. L. Hice.
A Simple Quantitative Analysis of Masticatory Efficiency in Malocclusions. H. H. Jan.
Use of Study Models in Balancing Tooth Substance. E. L. Johnson.
A New Approach to Retention. C. W. Konigsberg.
Reduction of Extreme Superior Dentoalveolar Protraction by Means of the Round Arch and Open Tube Appliance. R. A. Lee.
Mechanical Forces Used in Orthodontics. G. Y. Nagamoto.
Mechanical Phases of the Mandible at Rest Position and Open as Viewed From Lateral Head Films. J. H. Parker.
Distal Movement of Maxillary Anterior Teeth Following Extractions. N. A. Powell.
Orthodontic Evaluation of Orthodontic Treatment. R. A. Riedel.
Use of Kodachrome Slides in Visual Education. A. F. Skaife.
Retainers. W. J. Straub.
Acrylic Demonstration Models. H. S. Thompson.
Surgical Anatomy of the Temporomandibular Articulation in Mandibular Prognathism. C. H. Walrath.
Adult Orthodontics. A. W. Weiser.

Afternoon Session, Comstock Room

P.M.

1:45 Essay: Anterior Mandibular Growth. A brief review of the works of Broadbent and Brodie. Also measurements on skulls of different ages and practical cases to demonstrate the theoretical ideas advanced. Jess A. Linn, Los Angeles, Calif.

3:00 Essay: Present-Day Trends in Orthodontic Education. Wendell L. Wylie, Department of Orthodontics, School of Dentistry, University of California.

4:00 Business Meeting. Installation of Reuben L. Blake as president.

5:00 Adjournment.

Central Section of the American Association of Orthodontists

The Central Section of the American Association of Orthodontists held its annual meeting at the Hotel Roosevelt, Cedar Rapids, Iowa, Nov. 27 to 28, 1950.

The following is the program:

The Mechanical Therapy Employed in Following the Tweed Philosophy in Orthodontics. B. L. Herzberg, Chicago, Ill.

Labial and Lingual Arch Wire Technique, With Motion Pictures. Oren A. Oliver, Nashville, Tenn.

Some Thoughts About Anchorage. Howard E. Strange, Chicago, Ill.

Case Report. Cephalometric Appraisal of Class II, Division 1 Case of Malocclusion Treated With the Twin Arch Mechanism. William F. Ford, Chicago, Ill.

Cross-bites and Their Management. Chester F. Wright, South Bend, Ind.

CLINICS

1. Tubular Plastic Headcap. R. E. Baker, St. Paul, Minn.

2. Treatment Based on Functional Analysis. Vernon R. Boman, Chicago, Ill.

3. Consecutive Cases Treated According to the Concepts of Dr. Charles Tweed. George L. Englert, Danville, Ill.

4. Forming Arch Wires and Second Order Bends. Louis Tinthoff, Peoria, Ill.

5. Suggestive Uses of Occipital Anchorage in Orthodontics. Fred Fabric, St. Louis, Mo.

6. Cephalometry in Everyday Practice. E. E. Hoover, Ft. Dodge, Iowa.

7. Use of Headcaps in Treatment and Stabilization. Frank Jefferies, Des Moines, Iowa.

8. Making Johnson Loop Bands of Stainless Steel With the De La Rosa Contouring Plier. Frank K. Krivanek, Oak Park, Ill.

9. Intraoral Photography. Paul G. Ludwick and Kenneth E. Holland, Lincoln, Neb.

10. Results of Orthodontic Treatment, Employing Occipital Anchorage. Beulah G. Nelson, Oak Park, Ill.

11. Adjuncts to Orthodontic Treatment With Chrome Alloy. J. W. Norris, Burlington, Iowa.

12. Cleft Palate Cases. L. T. Oldham, Mason Ciy, Iowa

13. The Application of Endothermic Acrylic in the Construction of Occlusal Splints. Charles F. Zwisler, Mankato, Minn.

Procedure in Treatment of Class II, Division 1 Mandibular Displacement Cases. Joseph R. Jarabak, Homewood, Ill.

Technique of the Guide Plane, With Motion Pictures. Oren A. Oliver, Nashville, Tenn.

Case Report. Treatment of a Class II Case With the Occlusal Guide Plane and Twin Arch Appliance. Kenneth E. Holland, Lincoln, Neb.

Case Report. Treatment of a Class I, Bimaxillary Protrusion, Utilizing the Philosophy and Technique of Dr. Charles H. Tweed. George L. Englert, Danville, Ill.

Correction of Abnormalities of Occlusion by Grinding. Charles H. M. Williams, Toronto, Canada.

Northeastern Society of Orthodontists

The next or annual meeting of the Northeastern Society of Orthodontists will be held at the Waldorf-Astoria Hotel, New York, N. Y., on Monday and Tuesday, March 5 and 6, 1951.

Southern Society of Orthodontists

The Southern Society of Orthodontists held its twenty-sixth annual meeting at the Sherry Frontenac Hotel on glamorous Miami Beach, Fla., Nov. 15, 16, and 17, 1950.

Under the energic leadership of Dr. E. C. Lunsford, ably assisted by energic officers and committees, the meeting was marked by the dispatch with which it was conducted and the general interest manifested in the program.

The printed program featured the picture of Dr. C. C. Howard on the front page, to whom the program was dedicated. Under the picture were these words:

> This program is dedicated to Dr. C. C. Howard whom along with Dr. Oren Oliver conceived the idea of the Southern Society of Orthodontists. "Clint," as we all so affectionately know him, helped through the years to make this organization the most attractive and congenial organization. Let's all plead to keep the candle of fellowship burning in honor of those who lit it under the most trying circumstances when our profession was not regarded a member of the health professions.

In addition to that the printed program explained that the society was organized in Atlanta, Ga., Feb. 23, 1921, and that the charter members were: Clinton C. Howard, President, J. A. Gorman, Vice-President, Oren A. Oliver, Secretary-Treasurer, W. B. Childs, Donald Morrison, Carroll C. Johnson, Thad Morrison, Thomas T. Moore, Jr., Harle L. Parks, Wm. C. Fisher, Honorary Charter Member.

The bulk of the first day was devoted to an informal presentation of the construction and use of the precious metal removable appliance, by Drs. G. B. Crozat and S. D. Gore of New Orleans. The essayists outlined the history of the device and the technique of its use. Slides were presented revealing before and after treatment, detailed steps in construction of appliances, prepared models, making clasps, and the assembling of the finished appliance.

In the second period Dr. Crozat and Dr. Gore discussed manipulation of the appliance for treatment of various types of cases.

Inasmuch as this type of appliance has been in use for many years, particularly by the two essayists, and at the same time the devices have been heralded but little, interest proved to be intense. Many were amazed at the results obtained by the use of the removable appliance, and old-timers in the practice of orthodontics for many years were heard to say that previous to the presentation they were unaware that results displayed were possible by the use of removable appliances. To those who listened the opinion seemed to be unanimous that no small amount of practice and "know how" is a must for the successful use of the removable appliance as demonstrated by Drs. Crozat and Gore. One thing is certain, for the first time sufficient indoctrination and briefing were accomplished during the day devoted to the work to inspire many orthodontists to include this type of treatment in their future practices. Subsequent to the presentation two case reports were presented by Drs. S. W. Fennell of Augusta, Ga., and Neil Leonard of Memphis, Tenn. Dr. Fennell presented, "Treatment of a Class II Case With the Edgewise Mechanism, Following the Extraction of Four Premolars." Dr. Leonard followed with "Treatment of a Class I Case With the Twin Wire Appliance, Following the Extraction of Four Premolars."

On Thursday morning W. M. Krogman presented, "To Treat or Not to Treat." The problem of synchrony between rate of growth and area in which growth is scheduled was discussed as it involves the tridimensionality of faciodental growth in breadth, width, and height. Dr. Krogman made a masterful presentation and revealed an intense interest in the probable tie-in between his subject and orthodontics. In the afternoon Dr. Krogman presented, "Roentgenographic Cephalo-facio-dental Growth, Standardization of X-ray Mechanics and of Tracing the Resultant Radiographs. The Broadbent-Bolton Cephalometer." The most frequently employed plane of superimposition as a most variable factor in interpretation of sites and amounts of growth was discussed. Other planes currently in use were analyzed.

Friday's program was devoted to two lectures, the first by W. H. Oliver, D.M.D., "Construction and Placement of the Mesial Incisal Guide Plane," a motion picture showing close-up, detailed fabrication, with commentary and explanation, the placement of the appliances on the patient, and slides showing the completed case.

The second lecture was by H. K. Terry, B.S., D.M.D., "The Temporomandibular Joint in Guide Plane Cases." The placing of a guide plane assisted in excellent functional and esthetic arrangement of teeth in Class II cases. The effect on the temporomandibular articulation has been accepted as incidental. This study is an effort to arrive at a better understanding of the response of this joint while undergoing orthodontic treatment.

A case report was presented by Andrew F. Jackson, D.D.S., Philadelphia, Pa., "A Case of Open-Bite Showing Some Special Appliances Which Are Useful in the Treatment of This Form of Malocclusion."

Another was presented by W. H. Oliver, D.M.D., Nashville, Tenn., "The Occlusal Guide Plane as an Adjunct to the Labiolingual Technique," followed by the installation of officers.

In his opening address E. C. Lunsford, of Miami, president of the society, urged some plan to assure that orthodontists will be placed in their proper niche in the Armed Forces. Dr. Lunsford emphasized the need for the society to present some plan for proper cooperation with the military "so that never again will orthodontists be haphazardly used out of their own field of dentistry."

Subsequent to the meeting many orthodontists and their wives took a unique conducted tour via the passenger steamer, Florida to Cuba. This was probably the most extensive and complete social affair ever to be conducted as a social feature to an orthodontic meeting. Promptly upon landing in Cuba the group were met by a welcoming party from the University of Havana and conducted to what is probably one of the most

outstanding and perfectly equipped dental schools in the world. The one-half century mark of the school was being celebrated during that week and the visit of the orthodontists proved to be highly interesting and educational as well.

The group were then taken to the beautiful Hotel National De Cuba from which point conducted tours were sent out to many interesting spots in and about Havana.

Dr. E. C. Lunsford, Miami (left) retiring president of the Southern Society of Orthodontists, occupied the chair during the society's twenty-sixth annual meeting in the Sherry-Frontenac Hotel, Miami Beach, November 15, 16 and 17. With him are (Center) Dr. Samuel D. Gore and Dr. G. B. Crozat, both of New Orleans, La., who lectured on the method of treating teeth with precious metal removable appliances.

Drs. Crozat and Gore have used the removable appliance for many years; however, the method was presented for the first time in a complete presentation occupying a whole day. The program was arranged by Dr. Walter McFall, Chairman, and members of the program committee.

About two hundred orthodontists and their wives attended the meeting. To the president and his energetic committees must go the credit for staging an outstanding and colorful meeting, and to those who unselfishly gave of their time and energy to provide such an outstanding program, the society unanimously voted a debt of gratitude.

H. C. P.

Southwestern Society of Orthodontists

The thirtieth annual session of the Southwestern Society of Orthodontists was held on Oct. 16 to 20, 1950, in Monroe, La. President Nathan G. Gaston opened the meeting by giving a President's Address that contained many thoughts of importance to the entire membership of the A.A.O.

Dr. Harry Sicher, noted scientist of Chicago, Ill., lectured on biology of bone with special reference to orthodontic tooth movement.

Dr. Joseph E. Johnson showed a series of models and photographs of cases before treatment was started, also photographs of the same cases several years after treatment had been completed, showing the natural growth and development into a normal facial pattern after malocclusions had been corrected. He placed emphasis on the fact that promiscuous extraction of teeth would upset the normal facial pattern.

Dr. Spencer R. Atkinson lectured on orthodontics, a prescribed therapeutic procedure. In this he covered early diagnosis of malocclusion, basic sciences, changing dynamics of the growing face, and retention. He called attention to the fact that improper extraction of teeth caused spacing in that area that would not correct itself.

Drs. Bibb Ballard and Don A. Closson presented case reports.

The following general clinics were shown:

An Auxiliary Labial Appliance. Drs. Alstadt and Smith.

Treated Cases: Three and Four Years Out of Retention. Dr. Bibb Ballard.

A Case of Ectopic Eruption of the Upper Cuspids. Dr. Donald A. Closson.

Models of a Few Cases Treated With the Edgewise Appliances. Dr. S. P. Crain.

A Simplified Method of Constructing Light Labial Arches. Dr. Joe Favors and Dr. Frank Roark.

Completed Adult Orthodontic Cases. Dr. Robert E. Gaylord.

Leica Photography in Orthodontics. Drs. Pugh and Benton.

A Few Finished Cases. Dr. Roy G. Roberts.

Unusual Method Replacing Lost Incisors in Children. Dr. Harry H. Sorrels.

Dr. Spencer R. Atkinson gave an Appliances Clinic in which he showed many unique appliances and unusual techniques.

The social activities were staged with true southern hospitality. The golf tournament was run off Sunday afternoon at the Bayou DeSiard Country Club. The nineteenth hole stag party was held in the evening at the Hotel Francis.

The ladies' social program consisted of a buffet dinner at the Lotus Club and a luncheon at the Bayou DeSiard Country Club.

The President's party was staged Tuesday evening at the Bayou DeSiard Country Club where members and guests were entertained by a fine Dixieland band and a buffet supper that offered every delicacy of the South.

This thirtieth meeting was considered one of the best ever held by the Southwestern Society.

J. E. R.

Rocky Mountain Society of Orthodontists

The annual fall meeting of the Rocky Mountain Society of Orthodontists was held in Denver on Nov. 6 and 7, 1950. The following clinicians and their presentations made up the program:

H. V. Banks, Denver, Colo. Table Clinic, Fabrication of the Upper and Lower Removable Appliances for Moving Posterior Teeth Distally.

C. E. Burson, Denver, Colo. Paper and Kodachrome Slides, Removable Appliances.

E. H. Mullinax, Pueblo, Colo. Paper, Your Dollar and Mine.

A. B. Brusse and E. S. Linderholm, Denver, Colo. Kodachrome Movie and Table Clinic, Management of Chrome Alloy.

G. E. Ewan, Sheridan, Wyo. Table Clinic, Preventive Orthodontics.

Wm. R. Humphrey was moderator for the discussion of "Removable Appliances."

The session was completed by a business meeting at which time an election of officers for the ensuing year was held. The new officers are: President, Ernest T. Klein; Vice-President, Curtis E. Burson; Secretary-Treasurer, Don V. Benkendorf. Wm. R. Humphrey was elected delegate to the American Association of Orthodontists and J. Lyndon Carman is the alternate. Henry F. Hoffman was reelected Sectional Editor of the AMERICAN JOURNAL OF ORTHODONTICS.

Those in attendance from Denver were: E. T. Klein, H. V. Banks, D. V. Benkendorf, C. E. Burson, G. H. Siersma, W. R. Humphrey, C. L. Benight, T. A. Gardner, H. F. Hoffman, E. S. Linderholm, R. S. Gray, J. L Carman, A B. Brusse, O. H. Devitt, and K. E. Taylor. Those attending from out-of-town were: W. A. Blueher and Elbert W. King, Albuquerque, N. M., Louis Williams, Casper, Wyo., W. K. Appel, Cheyenne, Wyo., A. A. Battiste and E. H. Mullinax, Pueblo, Colo., Jack O'Donnell, Wichita, Kan., G. E. Ewan, Sheridan, Wyo., R. E. Harshman, Scottsbluff, Neb., and K. R. Johnson, Colorado Springs, Colo.

On Oct. 5, 1950, at the Colorado State Dental Association meeting in Colorado Springs, Colo., Dr. Henry F. Hoffman, orthodontist, of Denver, Colo., was presented with a bronze

plaque for his outstanding work in the field of dentistry. It bears the following inscription: "Presented to Henry F. Hoffman, D.D.S., selected by the Colorado State Dental Association as the Dentist of Colorado who has contributed most in the last fifty years to the advancement of the art and science of dentistry." At this time the Association also presented Mrs. Hoffman and Miss Ethel Covington, Dr. Hoffman's dental hygienist, each with a bouquet of roses.

President Ernest T. Klein wishes for me to call your attention to the second news item, in that this is a new honor in addition to those received by Dr. Hoffman in the past.

Don V. Penkendorf, D.D.S., Secretary-Treasurer.

Orthodontic Directory of the World, 1950

The fifteenth edition of the *Orthodontic Directory of the World* compiled by Oren A. Oliver, D.D.S., L.L.D., and William H. Oliver D.M.D., is now off the press and has been distributed to many orthodontists throughout the world.

The directory is dedicated to Dr. Bernhard Wolf Weinberger, the leading historian of dentistry. By way of explanation it is stated that

> In 1917, he compiled a directory for his own personal use, which was later lent to Dr. W. C. Fisher of New York to be used as a basis for a published list of orthodontists. In 1921, the first Orthodontic Directory of the World was published for sale, and much of its accuracy and success was due to Dr. Weinberger's original compilation.

The editors have used every available means at their command to make the fifteenth edition of the *Orthodontic Directory of the World* as nearly correct as possible, but errors may have been made. Although every available means was used to contact all orthodontists eligible for listing, because of changes in the address of a number of orthodontists formerly listed, names may have been inadvertently omitted despite efforts.

It is explained that credit is not given to alumni societies of schools or local or other societies not affiliated with the parent national organization. Such minority group societies not affiliated with the parent national organization merely tend to weaken the orthodontic profession and consequently are not recognized in the directory.

There is a key arrangement to the directory: The date immediately following the name represents the date of dental degree while the remaining data represents postgraduate instruction and dates, association and dates, and membership in orthodontic societies.

Of interest to the readers of the JOURNAL is the key arrangement as to education of the orthodontist. The key arrangement is as follows:

A.	Angle School
U.B.	University of Buffalo
U. Cal.	University of California
U.S.C.	University of Southern California
U.C.	Chicago College of Dental Surgery
Col. U.	Columbia University
U. Det.	University of Detroit
D.	Dewey School
E.	Emory University
F.	Forsyth
G.	Griffin
H.	Harvard
I.	International
U. Ill.	University of Illinois
U. Ind.	University of Indiana
U. Io.	University of Iowa
L.U.	Loyola University at Chicago (formerly Chicago College of Dental Surgery)

U.M.	University of Michigan
U. Minn.	University of Minnesota
U. Mont.	University of Montreal
N.U.	Northwestern University
N.Y.U.	New York University
O.S.U.	Ohio State University
U. Ore.	University of Oregon
U. Pa.	University of Pennsylvania
U. Pitt.	University of Pittsburgh
St.L.U.	St. Louis University
S.F.	San Francisco University (formerly College of Physicians and Surgeons)
U.T.	University of Tennessee
T.U.	Temple University
U. Tor.	University of Toronto
T.	Tufts
W.U.	Washington University (at St. Louis)
U.W.	University of Washington (Washington State)

A.B.O.—Indicates those Orthodontists who have been certified by the American Board of Orthodontics.

A.A.O.	American Association of Orthodontists
Cen.	Central Association of Orthodontists
E.A.A.	Eastern Association of Graduates of Angle School
G.L.	Great Lakes Association of Orthodontists
Ne.	Northeastern Society of Orthodontists
Pc.	Pacific Coast Society of Orthodontists
R.M.	Rocky Mountain Society of Orthodontists
So.	Southern Society of Orthodontists
Sw.	Southwestern Society of Orthodontists
A.M.O.	Asociacion Mexicana de Ortodoncia
A.O.C.	Asociacion de Ortodoncistas de Cuba
Arg.S.O.	Argentina Society of Orthodontists
A.O.	Australian Society of Orthodontists
Br.O.	British Society for the Study of Orthodontics
E.O.S.	European Orthodontological Society
Fr.O.	Societe Francaise d'Orthopedie Dento-Faciale
N.Z.	New Zealand Orthodontic Society
J.O.S.	Japanese Orthodontic Society
S.O.Ch.	Sociedad de Ortodontia de Chile
S.O.Col.	Sociedad de Ortodoncia de Colombia

The directory lists the members of the American Board of Orthodontics and the orthodontic societies of the world. It is understood that in the future branch offices of orthodontists will not be listed in the official directory.

All in all the directory is a handy and much-needed contribution to orthodontic literature. It may be secured by writing to the Editors at 1915 Broadway, Nashville, Tenn.

Orthodontics in 1814

Associate Editor of the JOURNAL, Charles R. Baker, of the Central District, recently came in possession of a book on dentistry published in 1814 by Benjamin James, M.M. S.S. In the book there is a chapter on "Irregularity of the Teeth." Dr. Baker has copied this chapter and it is thought that it will be of interest to the readers of the JOURNAL today, one hundred thirty-seven years later.

Chapter entitled "Irregularity of the Teeth" which appeared in a book, *A Treatise on the Management of the Teeth*, by Benjamin James, M.M.S.S. Published by Charles Callender, Boston, 1814.

The following notice appears on the back cover (outside) of the book:

> "THIS WORK may be obtained of the author, at his house, No. 12, Water Street; And at principal Bookstores in Boston."

IRREGULARITY OF THE TEETH

The milk teeth are seldom subject to any irregularity; there are, however, instances of their coming in such an unnatural position as to do injury to the cheeks, or tongue; an injury, which extraction obviates. The same irregularity may operate as an impediment to the speech, or as a cause of derangement in the order of the second set of teeth.

A few years since, Mr. Fennell, the tragedian, whose success in the instruction of youth, particularly of the deaf and dumb, is well known, brought to me a dumb girl, who was not deaf, of six or seven years of age: her dumbness, as Mr. Fennell supposed, arose from the extreme irregularity of all the milk teeth; some of them pointing outwards to the cheek, others turning in towards the tongue, and wounding it, exhibiting every variety of position except the natural. I extracted the whole of the teeth for the little girl, whose courage, and submission to such frequent operations, gave proof of her intelligence, as well as her ambition to acquire the use of her tongue. Every day or two, a tooth was taken out, and it was very evident that each operation removed an obstacle to her articulation. With the assistance of Mr. Fennell, she increased her vocabulary of single words, as the number of her teeth decreased, so that by the time the whole were removed, she was able to deal out a few short sentences, which were well pronounced.

With proper attention paid to the removal of the first set of teeth, the regularity of the second may be anticipated; and this attention must be kept up, until the first set are wholly supplanted by the permanent teeth; an event, which, as before mentioned, does not complete itself, until the child has attained his twelfth, or fourteenth year.

We are oftener called upon to cure irregularity, than to prevent it; we shall therefore make a few remarks on those modes of proceeding, which appear best suited to our purpose.

When the permanent teeth have displaced the first set, the former are often observed to be so much crowded, and deranged, as to produce the appearance of unnecessary profusion in their number. The deformity thus occasioned, and the greater aptness to decay, from the collection of foul matters in their numerous interstices, render it necessary to restore them as nearly to a state of perfect regularity as possible.

The jaw of a person very young is so soft and yielding, that a tooth, taken out at a considerable distance from a deranged tooth, makes room for it; the teeth on each side of the one extracted crowding in to fill up the vacancy. But when the jaw has become more hard, and unyielding, we can make room for deranged teeth only by drawing those in immediate contact with them. Then, by gentle compression of the finger applied daily for several weeks to the deranged tooth, we see it come into its proper place as effectually as from ligatures, springs, or violence.

The most common, and the most unpleasant irregularity happens in the eye teeth, and those included between them. Young people of courage have submitted, when the teeth have been much crowded, to have one of the grinders extracted from both sides of each jaw, and in this way, have secured to themselves a set of handsome, useful, and lasting teeth.

Compression of the finger will usually bring teeth into their proper places, if room be made for them, and if attended to before age has given too much firmness to the jaw. This operation is extremely easy in children; quite difficult in those who have all their teeth, (thirty-two in number;) and not at all practicable with those, whose ages are far advanced.

Dentistry and Public Health

According to an editorial that appeared in the *New York Journal of Dentistry*, December, 1950, and written by one of our Associate Editors, Dr. J. A. Salzmann, the following is quoted because it is of interest to the readers of the JOURNAL:

DENTISTRY IN PUBLIC HEALTH PLANNING

The midcentury White House Conference for Children and Youth with its emphasis on "the mental, emotional and spiritual qualities essential to citizenship," requested all States to prepare statements reviewing progress made in the provision of services for meeting the total needs of the children of the State, of evaluating the current status of these services, of determining the steps which should be taken, and of following through the promoting action toward this goal.

Governor Dewey appointed a "Citizens' Committe of One Hundred for Children and Youth," to prepare this report. Sectional committees were appointed to aid in the work. Dental health supervision and dento-facial defects were included in the Child Health Section. Dentists invited to participate were Dr. William McGill Burns, Dr. David B. Ast, and Dr. J. A. Salzmann.

The following recommendations relating to dentistry were adopted by the Child Health Section:

RECOMMENDATIONS

Sub-Section of Dental Health Supervision and Dentofacial Defects of the Child Health Section, State Citizens' Committee

I. TOTAL CHILD HEALTH SUPERVISION

1. Full utilization of prophylactic measures which have proven effective and which may be developed in the future.

    a. Topical application of sodium fluoride should be made available to every child, either through his family dentist or through community facilities.

    b. Fluoridation of community water supplies in line with the stated policy of the New York State Department of Health.

2. Full utilization of health education techniques with a view to motivation to action rather than distribution of factual material.

3. Personnel

    a. Increased facilities for the education of dentists and dental hygienists and to effect a better distribution of services in areas of need.

4. Community dental care program for pre-school and school age children starting with first grade children and conducted on annual increment basis through private dental care and community facilities.

5. A survey should be made to determine the extent of dental disease other than dental caries, with special reference to lesions of the investing tissues of the teeth and their relationship to growth and development.

6. A dental examination by dental personnel be part of all general physical examinations of children in community programs.

II. CARE OF PHYSICALLY HANDICAPPED CHILDREN

DENTOFACIAL DEFECTS

1. Dental examining the school children should include the examination and recording of the occlusion of the teeth, and referral for proper care.

2. Designate centers for the treatment of children with facial and palatal clefts. Such centers to be established where a team of physicians, dentists, orthodontists, psychiatrists, social service workers, speech teachers and other participating personnel could work together for the rehabilitation of the affected child.

3. Present facilities in the State Aid Program for the correction of physically handicapping dentofacial abnormalities should be expanded, especially in areas of need.

In view of the deep interest in dental health of children on the part of public health workers and the public in general, it is not only incongruous but actually dangerous for dentists to continue to talk about the importance of dental care for children while refusing, at the same time, to treat children, as some dentists do, in their own offices.

American Dental Association

Throughout the nation the third annual National Children's Dental Health Day will be observed Monday, Feb. 5, 1951. The event is sponsored by the American Dental Association and its hundreds of state and district dental societies.

Parents, teachers, and civic leaders will join the nation's 75,000 dentists in staging programs directed toward focusing attention on the need for improved dental health for all children.

Pointing out that tooth decay, civilized mankind's most common disease, afflicts more than 90 per cent of the nation's school-age children, Dr. Harold W. Oppice, of Chicago, Association president, said:

> The 1951 National Children's Dental Health Day observance is designed to stress the development of expanded community dental health programs to make dental health education and care available to all children.
>
> It will be urged that children should be given a priority for dental care, thus paving the way for high general standards of dental health in the future.
>
> The control of dental decay by administering timely dental treatment to children assures a definite lowering of serious dental defects in later life.

Notes of Interest

Dr. Milton B. Asbell wishes to announce that he is now engaged in the practice of orthodontics at 632 Federal St., Camden 3, N. J., hours by appointment.

William C. Brock, D.D.S., M.S., announces the opening of his offices at the First National Bank Bldg., Rome, Ga., practice limited to orthodontics.

Victor H. Dietz, D.D.S., Ph.D., announces the opening of his offices with practice limited to dental diagnosis, endodontia, and periapical surgery, at University Club Bldg., Grand and Washington, St. Louis 3, Mo.

Dr. Stephen C. Hopkins announces the removal of his office to the Parkwood Medical Bldg., 1746 K St., N. W., Washington, D. C., practice limited to orthodontics.

Jack Perlow, B.S., D.D.S., announces the opening of his office for the exclusive practice of orthodontics at 1777 Ocean Parkway, Brooklyn 23, N. Y.

Dr. William J. Speers is discontinuing, on Dec. 31, 1950, the practice of orthodontics at his Boston office, and will devote his entire time to his office at 15 Dix St., Winchester. It is with pleasure that he introduces Dr. Henry C. Beebe, who will conduct the practice at 60 Charlesgate West, Boston, after Jan. 1, 1951.

Dr. Clifford L. Whitman announces the removal of his office on Nov. 13, 1950, to 268 Moore St. (one block from present office), Hackensack, N. J., practice limited to orthodontics.

OFFICERS OF ORTHODONTIC SOCIETIES

The AMERICAN JOURNAL OF ORTHODONTICS is the official publication of the American Association of Orthodontists and the following component societies. The editorial board of the AMERICAN JOURNAL OF ORTHODONTICS is composed of a representative of each one of the component societies of the American Association of Orthodontists.

American Association of Orthodontists

President, Joseph E. Johnson - - - - - - - - - - - - - Starks Bldg., Louisville, Ky.
President-Elect, Bernard G. deVries - - - - - - Medical Arts Bldg., Minneapolis, Minn.
Vice-President, Homer B. Robison - - - - - Rorabaugh-Wiley Bldg., Hutchinson, Kan.
Secretary-Treasurer, George R. Moore - - - - - - - - - - Box 8, Ann Arbor, Mich.

Central Section of the American Association of Orthodontists

President, L. B. Higley - - - - - - - - - - - - - - 705 Summit St., Iowa City, Iowa
Secretary-Treasurer, Earl E. Shepard - - - - - - - - 4500 Olive St., St. Louis, Mo.

Great Lakes Society of Orthodontists

President, C. Edward Martinek - - - - - - - - - - - - Fisher Bldg., Detroit, Mich.
Secretary-Treasurer, Scott T. Holmes, 509 Hackley Union National Bank Bldg., Muskegon, Mich.

Northeastern Society of Orthodontists

President, Richard Lowy - - - - - - - - - - - - - 302 Main St., Chatham, N. J.
Secretary-Treasurer, Oscar Jacobson - - - - - - - - 35 W. 81st St., New York, N. Y.

Pacific Coast Society of Orthodontists

President, C. F. S. Dillon - - - - - - - - - - - - - Taft Bldg., Hollywood, Calif.
Secretary-Treasurer, Frederick T. West - - - - - - 870 Market St., San Francisco, Calif.

Rocky Mountain Society of Orthodontists

President, Ernest T. Klein - - - - - - - - - - - - - Republic Bldg., Denver, Colo.
Vice-President, Curtis E. Burson - - - - - - - - - 1232 Republic Bldg., Denver, Colo.
Secretary-Treasurer, Don V. Benkendorf - - - - - 932 Metropolitan Bldg., Denver, Colo.

Southern Society of Orthodontists

President, E. C. Lunsford - - - - - - - - - - - - 2742 Biscayne Blvd., Miami, Fla.
Secretary-Treasurer, Frank P. Bowyer - - - - - - Medical Arts Bldg., Knoxville, Tenn.

Southwestern Society of Orthodontists

President, Nathan G. Gaston - - - - - - - - - - - - Bernhardt Bldg., Monroe, La.
Secretary-Treasurer, Marion A. Flesher - - - Medical Arts Bldg., Oklahoma City, Okla.

American Board of Orthodontics

President, Joseph D. Eby - - - - - - - - - - - - 121 E. 60th St., New York, N. Y.
Vice-President, Stephen C. Hopkins - - - - - - - 1726 Eye St., N. W., Washington, D. C.
Secretary, C. Edward Martinek - - - - - - - - - - 661 Fisher Bldg., Detroit, Mich.
Treasurer, Reuben E. Olson - - - - - - - - - - - 712 Bitting Bldg., Wichita, Kan.
Raymond L. Webster - - - - - - - - - 133 Waterman St., Providence, R. I.
Leuman M. Waugh - - - - - - - - - - 931 Fifth Ave., New York, N. Y.
Ernest L. Johnson - - - - - - - - - - 450 Sutter St., San Francisco, Calif.

A List of the Orthodontic Societies of the World and Their Principal Officers*

Chicago Association of Orthodontists

President, B. F. Dewel - - - - - - - - - - - - - - - 708 Church St., Evanston, Ill.
President-Elect, Howard J. Buchner - - - - - - - - - - 1011 Lake St., Oak Park, Ill.
Secretary-Treasurer, Beulah G. Nelson - - - - - - - - - 715 Lake St., Oak Park, Ill.

Harvard Society of Orthodontists

President, Joseph K. Gold - - - - - - - - - - - - - - 316 High St., Holyoke, Mass.
Vice-President, Lawrence J. Obrey - - - - - - 70 Langley Road, Newton Center, Mass.
Secretary, Bernard C. Rogell - - - - - - - - - - - - 6 Pleasant St., Malden, Mass.
Treasurer, Clifford G. Hunt - - - - - - - - - - - 14 Muzzey St., Lexington, Mass.

New York Society for the Study of Orthodontics

President, Jack Perlow - - - - - - - - - - - - - 1777 Ocean Parkway, Brooklyn, N. Y.
Vice-President, Henry Furgatch - - - - - - - - - 31 East 12th St., New York, N. Y.
Secretary, Leon M. Gecker - - - - - - - - - - - - 305 West 72nd St., New York, N. Y.
Treasurer, Julius M. Weinberger - - - - - - - - - - 4 West 57th St., New York, N. Y.

New York University Orthodontic Society

President, Robert J. DiTolla - - - - - - - - - - - 5 E. 53rd St., New York, N. Y.
Secretary-Treasurer, Benjamin Ackerman - - - - - 7616 Bay Parkway, Brooklyn, N. Y.

Philadelphia Society of Orthodontists

President, E. O. Rosenast - - - - - - - - - - - - - Wilson Bldg., Camden, N. J.
Secretary-Treasurer, John M. Jackson - - - - - - Medical Arts Bldg., Philadelphia, Pa.

St. Louis Society of Orthodontists

President, B. W. Cordes - - - - - - - - - - - Missouri Theatre Bldg., St. Louis, Mo.
Vice-President, O. W. Brandhorst - - - - - - - - - - 4952 Maryland, St. Louis, Mo.
Secretary-Treasurer, E. W. Bedell - - - - - - - 1504 S. Grand Blvd., St. Louis 4, Mo.

Orthodontic Club of Toronto

President, H. Colton Bliss - - - - - - - - - - - Medical Arts Bldg., Toronto, Canada
Secretary-Treasurer, John T. Crouch - - - - - - 185 St. Clair Ave., W., Toronto, Canada

Washington-Baltimore Society of Orthodontists

President, William Kress - - - - - - - - - - - - Medical Arts Bldg., Baltimore 1, Md.
Vice-President, Leigh C. Fairbank - - - - - - 1726 Eye St., N. W., Washington 6, D. C.
Secretary-Treasurer, Carlotta A. Hawley - - - - 915 19th St., N.W., Washington 6, D.C.

Sociedad Argentina de Ortodoncia

President, Miguel A. Finocchietti - - - - - - - - - - Serrano 638, Buenos Aires
Secretary, Samuel Pisarenko - - - - - - - - - - - - Esmeralda 860, Buenos Aires
Treasurer, Antonio J. Guardo - - - - - - - - - - - Pueyrredon, 2338, Buenos Aires

Sociedad Brasileira de Ortodoncia

President, Joaquim Cavalcanti - - - - - - - Praca G. Vargas 2, S. 422, Rio de Janeiro
Vice-President, Kant Duarte - - - - Rua Manuel de Carvalho, 16-9°, S. 91, Rio de Janeiro
Secretary, Virgilio Moozen - - de Oliverira, Av. Rio Branco 311-6°, S. 613, Rio de Janeiro

*In the January issue of the AMERICAN JOURNAL OF ORTHODONTICS is published each year a list of the orthodontic societies of the world of which the JOURNAL has any record, along with the names and addresses of their principal officers.

The JOURNAL keeps a file for each of these societies and publishes the names that appear in that file as of the date of going to press.

Foreign Societies

British Society for the Study of Orthodontics

President, M. W. Rushton - - - - - - - - - - - - Guy's Hospital, S. E. 1, London
Secretary, K. E. Pringle - - - - - - - - - - - 12 Manchester Square, W.1, London
Treasurer, Harold Chapman - - - - - - - - - - 6 Upper Wimpole St., W.1, London

Sociedad de Ortodoncia de Chile

President, Arturo Toriello A. - - - - - - - - - - - - - Londres No. 63, Santiago
Vice-President, German Moreno J. - - - - - - - - - - - Phillips No. 56, Santiago
Secretary, Eduardo Manns S. - - - - - - - - - - - - Mac Iver No. 272, Santiago
Treasurer, Pedro Gandulfo G. - - - - - - - - - - - - Londres No. 63, Santiago
Librarian, Sergio Silva C. - - - - - - - - - - - - - - Moneda No. 1035, Santiago

Sociedad Colombiana de Ortodoncia

President, José Mayoral - - - - - - - - - - - - - - Carrera 9, No. 21-68, Bogota
Vice-President, Obdulio Mendez - - - - - - - - - - - - Calle 12, No. 15-06, Bogota
Secretary-Treasurer, Marco Novoa - - - - - - - - - - - Calle 11, No. 17-30, Bogota

Cuban Association of Orthodontists

President, Rafael Reineke - - - - - - - - - - - - - Calle A 603, Vedado, Habana
Vice-President, Pablo Vallhonrat - - - - - - - - - - - Calle 21 452, Vedado, Habana
Secretary-Treasurer, Federico R. de la Rosa - - - - - - - - San Miguel 409, Habana

European Orthodontic Society

President, R. Selmer-Olsen - - - - - - - - - - - - Karl Johangst, 20, Oslo, Norway
Vice-President, Georges Gugny - - - - - - - - - 20, Rue Mogador, Paris, 9E, France
J. A. C. Duyzings - - - - - - - - 19, Hamburgerstaat, Utrecht, Holland
Hon. Secretary, Norman Gray - - - - - - 16, College Rd., Eastbourne, Sussex, England
Asst. Hon. Secretary, Arnlgot Gaane - - - - Norges Tannlegehogskole, Geitmyrsvegen 69, Oslo, Norway
Hon. Treasurer, S. E. Wallis - - - - - - - 431, Footscray Rd., London, S.E.9, England
Hon. Editor, K. C. Smyth - - - - - - - - - 57, Harley St., London, W.1, England

Guatemalan Association of Orthodontics and Relative Sciences

President, Alfredo A. Morales - - - - - - 13 Calle Poniente No. 9a, Guatemala City
Vice-President, Eduardo Garcia Salas - - - - 4a Calle Poniente No. 13, Guatemala City
Treasurer, Guillermo Caceres L. - - - - - - - - 9a Ave. Sur. No. 17, Guatemala City
Secretary, Enrique Estrada H. - - - - - - 8a Calle Poniente No. 8, Guatemala City
Assistant Secretary, Ricardo F. Novales - - - - Pasaje Rubio-Altos-Sur., Guatemala City

Israel Orthodontic Society

President, H. Berger - - - - - - - - - - - - - - 69 Rothschild Blvd., Tel Aviv
Secretary-Treasurer, H. C. Berendt - - - - - - - - - 36. Ben-Jehuda St., Jerusalem

Asociación Méxicana de Ortodoncia

President, Wilfrido Arias - - - - - - - - - - - Motolinia No. 37, Mexico, D. F.
Secretary, Manuel Castro Cue - - - - - - - - - - - - - - Londres No. 75-401
Treasurer, Margarita Correa - - - - - - - - - - - Madero 40-102, Mexico, D. F.

Sociedad Peruana de Ortodoncia

President, Augusto Taiman - - - - - - - - - - - - - - Arzobispo 284, Lima
Vice-President, Ricardo Salazar - - - - - - - - - - - - - Edificio Olaya 38, Lima
Secretary, Carlos Elbers - - - - - - - - - - - - - - - Arzobispo 284, Lima
Treasurer, Gerardo Calderon -